

Predecisional

DOE/EA-1696

U.S. DEPARTMENT OF ENERGY



ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED PANTEX RENEWABLE ENERGY PROJECT



PANTEX PLANT * AMARILLO, TEXAS * March 2010



CONTENTS

1		
2		
3	LIST OF FIGURES.....	ii
4	LIST OF TABLES.....	ii
5	ACRONYMS.....	iii
6		
7	1.0 INTRODUCTION	1
8	2.0 BACKGROUND	1
9	2.1 PURPOSE AND NEED FOR THE PROJECT	2
10	2.1.1 Proposed Action	2
11	2.2 PROJECT DESCRIPTION	2
12	2.3 NO-ACTION ALTERNATIVE.....	3
13	2.3.1 Public-Private Partnership Alternative	4
14	2.3.2 Combined Phase 1 Action and Public-Private Partnership Alternative	4
15	2.3.3 Alternatives Considered But Dismissed From Further Consideration	4
16	2.4 SCOPE OF THE EA	4
17	3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	6
18	3.1 REGIONAL SETTING	6
19	3.2 SITE-SPECIFIC DESCRIPTION AND ANALYSIS	8
20	3.2.1 Land Use	8
21	3.2.2 Water Resources.....	11
22	3.2.3 Biological Resources	12
23	3.2.4 Air Quality and Climate Change	14
24	3.2.5 Visual Resources	16
25	3.2.6 Noise.....	17
26	3.2.7 Human Health.....	18
27	3.2.8 Transportation/Traffic	18
28	3.2.9 Waste	19
29	3.2.10 Environmental Restoration.....	20
30	3.2.11 Utilities Infrastructure	21
31	3.2.12 Socioeconomic Resources	22
32	4.0 CUMULATIVE EFFECTS	22
33	4.1 LAND USE.....	23
34	4.2 WATER RESOURCES.....	23
35	4.3 BIOLOGICAL RESOURCES	23
36	4.4 AIR QUALITY AND CLIMATE CHANGE.....	23
37	4.5 VISUAL.....	24
38	4.6 NOISE.....	24
39	4.7 HUMAN HEALTH.....	24
40	4.8 TRANSPORTATION/TRAFFIC.....	24
41	4.9 CONSTRUCTION WASTE.....	24
42	4.10 UTILITIES	24
43	4.11 SOCIOECONOMIC RESOURCES	25
44	5.0 ACCIDENT ANALYSIS.....	25
45	6.0 INTENTIONAL DESTRUCTIVE ACTS	26
46	7.0 AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED	26

1	8.0 REFERENCES	27
2	APPENDIX A	29
3	AGENCY CORRESPONDENCE.....	29

4

5

6

FIGURES

7

8	Figure 1. Location of Pantex and Key Areas.....	7
---	---	---

9	Figure 2. Proposed Wind Turbine Generator Locations.....	10
---	--	----

10

11

12

13

TABLES

14

15	Table 2-1 Initial Screening of Alternative Energy Sources.....	4
----	--	---

16	Table 3-1 Maximum Construction Activity Impacts on Land Use	9
----	---	---

17	Table 3-2 Comparison of Current Emissions to Post Project Emission Avoidance.....	16
----	---	----

18

1
2**ACRONYMS**

AAI	Actions in the Area of Influence
AGC	Average Generating Capacity
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Constituents of Concern
CRP	Conservation Reserve Program
dba	decibels A-weighted
DOC	Department of Commerce
DOE	Department of Energy
EA	Environmental Assessment
EPA	Environmental Protection Agency
ERCOT	Electric Reliability Council of Texas
ESL	Effect Screening Levels
FM	Farm-to-Market Road
FSA	Farm Services Agency
GHG	Greenhouse Gases
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
OSHA	Occupational Safety and Health Administration
PGPTS	Perched Groundwater Pump and Treat System
RCRA	Resource Conservation and Recovery Act
SA	Supplement Analysis
SCADA	Supervisory Control and Data Acquisition
SHP	Southern High Plains
SHPO	State Historic Preservation Officer
SWEIS	Site-wide Environmental Impact Statement
SWMU	Solid Waste Management Unit
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TPDES	Texas Pollutant Discharge Elimination System
TTRF	Texas Tech Research Farms
TTU	Texas Tech University
USFWS	United States Fish and Wildlife Service
WTG	Wind Turbine Generators
WTAMU	West Texas A&M University

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

THIS PAGE INTENTIONALLY LEFT BLANK

1.0 INTRODUCTION

The National Environmental Policy Act (NEPA) requires Federal agency officials to consider the environmental consequences of their proposed actions before decisions are made. In complying with NEPA, the Department of Energy/National Nuclear Security Administration (DOE/NNSA) follows the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1500-1508) and DOE's NEPA-implementing procedures (10 CFR 1021). The purpose of an environmental assessment (EA) is to provide federal decision makers with sufficient evidence and analysis to determine whether to prepare an environmental impact statement or issue a Finding of No Significant Impact.

2.0 BACKGROUND

The DOE/NNSA must maintain long-term, efficient, and effective operations of the Pantex Plant. The NNSA Pantex Plant mission is to maintain the safety, security and reliability of the nation's nuclear weapons stockpile. Pantex supports the life extension programs, weapon assembly/disassembly, and the development, testing and fabrication of high explosive components. Additionally, Pantex is charged with the staging and surveillance of nuclear weapon components.

As DOE/NNSA moves toward its vision to achieve a smaller, safer, more secure, energy efficient and less expensive enterprise, one vital strategy is development of alternative renewable energy sources that support both the DOE Strategic Plan and NNSA Strategic Plan by providing efficient stewardship of the NNSA complex based on current and projected mission of the Plant.

The DOE Strategic Plan, Strategic Goal 1.1, "Energy Diversity," states "Increase our energy options and reduce dependence on oil, thereby reducing vulnerability to disruption and increasing the flexibility of the market to meet U.S. needs. Energy diversity is essential for America's energy security and economic prosperity."

The NNSA Strategic Plan regarding facilities and infrastructure, Strategic Goals 1.1, "State of the Enterprise," and 1.2, "Planning Horizon," require corporate facilities management processes that assess facilities' needs on an ongoing basis and respond with appropriate capital investment for the long-term stewardship of the complex.

Executive Order (EO) 13423, "Strengthening Federal Environmental, Energy and Transportation Management," sets goals in the areas of energy efficiency, renewable energy, recycling, sustainable buildings, and water conservation.

EO 13514, "Federal Leadership in Environmental, Energy, and Economic Performance" establishes an integrated strategy towards sustainability in the Federal Government and makes reduction of greenhouse gas emissions a priority for Federal agencies.

The Environmental Protection Agency (EPA) Green Cleanup Standard Initiative goal is to develop, through a consensus process, a standard that evaluates and minimizes the environmental footprint from a cleanup. The core elements of green cleanup include maximizing the use of renewable energy and minimizing air pollutants and greenhouse gases (EPA, 2009a).

2.1 PURPOSE AND NEED FOR THE PROJECT

2.1.1 Proposed Action

The proposed action would design, construct, operate, and maintain a wind generator farm and its associated distribution infrastructure on Pantex Federal property or leased land using federal funding. The wind turbine generators (WTG), at a minimum, would have sufficient capacity/power to satisfy Pantex Plant energy demand when conditions are favorable to generate electrical power.

NNSA needs the capability to generate and distribute electricity at Pantex Plant as a renewable energy source. The required quantity generated, as a minimum, would be sufficient to meet or exceed Pantex Plant demands during periods when conditions are favorable to generate alternative electrical power. Any surplus electrical energy generated would allow the DOE/NNSA to maximize credit for the use of renewable energy sources and reduce the Plant's annual operating expenditures.

2.2 PROJECT DESCRIPTION

When completed, the wind generator farm would have an average generating capacity (AGC) of approximately 40 megawatts (MW) of electricity. The potential MW is based on the name plate rating of the generator, while the actual MW production (AGC) depends on the model of WTG used and the wind efficiency at the geographical location. The average wind capacity factor in the project area would be approximately 45 percent (a 2.1 MW name plate rated WTG would actually produce 0.945 average MW of electricity over the course of a year at 45 percent wind capacity factor). For purposes of this EA, and to use a conservative approach, the average wind capacity factor would be estimated at 50 percent.

The proposed action would be completed in three phases. Phase 1 would consist of 4 – 7 WTG constructed on federal property, with a total of 5 – 7.5 MW AGC that would be connected to the existing Pantex Plant south substation's 12.5 kilovolt (kV) distribution system.

Phase 2 of the proposed action would bring the total AGC to approximately 30 MW with the addition of 20 – 23 WTG constructed on federal property or federally leased property. This phase would include the construction of a new substation to step the voltage up to 115 kV and a control building with extension of utilities to the building. The new substation and control building would be located on federal property.

Phase 3 of the proposed action would bring the total AGC to approximately 40 MW with the addition of 8 – 9 WTG constructed on federally leased property and connected to the substation built during Phase 2.

After the completion of Phase 2, any surplus electrical energy produced would be distributed to the power grid, either through Xcel Energy, the Electric Reliability Council of Texas (ERCOT), or another user, allowing the DOE/NNSA to maximize credit for the use of renewable energy. If the surplus electrical energy is distributed to the power grid through ERCOT, a grid connection line to a proposed wind power collection point in Carson County would be constructed. This grid connection line would require the acquisition of approximately fourteen miles of right-of-way.

The final locations of the WTG would require coordination with the Federal Aviation Administration (FAA) prior to construction. The scope of the project would include filing a Notice of Proposed Construction (Form 7460-1) with the FAA. It is anticipated that negotiations with the FAA would be required in order to obtain a Determination of No Hazard to Air Navigation.

Construction activities for Phase 1 and Phase 2 would include the improved access roads, which would be constructed prior to the installation of the WTG on Pantex property. A permanent all weather road of

1 approximately 21,200 linear feet, 20 – ft wide would be required for construction and would remain in
2 place for operation and maintenance purposes.

3
4 Construction would include a permanent all weather road approximately 37,000 linear feet, 20 – ft wide
5 on property leased to DOE/NNSA by Texas Tech University (TTU).

6
7 Although the exact foundation size and configuration for the support of the WTG towers would be
8 dependent on the manufacturer's specifications, the maximum size for each foundation would be 40-ft by
9 40-ft, and 12-ft in depth.

10
11 It is anticipated that a lay-down area would be required for a temporary construction office and the
12 staging of materials, which would require approximately one acre of land use. It is also estimated that the
13 installation of each WTG would impact one acre during the assembly of the towers, turbines, and blades.

14
15 The installation of the underground power collection between WTG would require trenching of
16 approximately 21,200 linear feet, 12-inches in width and 36-inches deep on Pantex property during
17 Phases 1 and 2.

18
19 During Phase 3, the underground power collection between WTG would require trenching of
20 approximately 28,000 linear feet, 12-inches in width and 36-inches deep on DOE/NNSA controlled TTU
21 property.

22
23 The new substation and interconnect to the power grid, installed during Phase 2, would impact
24 approximately 1.6 acres and 2.1 acres, respectively. Phase 2 would also include:

- 25
26
 - The construction of a control building and extension of utilities to the building.
 - 27 • Installation of a Supervisory Control and Data Acquisition (SCADA) system.
 - 28 • Installation of signage, fences, etc. for access and maintenance.

29

30 The exact details for location, spacing, and foundation size for the WTG would be dependent on the
31 manufacturer's specifications and design criteria; therefore descriptions for purposes of this EA are worst
32 case scenarios as to impacts.

33
34 Site decommissioning would involve the reverse of site development. All turbines and their towers
35 would be dismantled and either recycled at other wind energy projects, sold for scrap, or disposed of off
36 site as solid waste after fluid removal. Broken concrete could be reused for road base or erosion
37 stabilization. Electronic equipment would be recycled or disposed of, possibly as hazardous waste
38 because of the presence of heavy metals. Transformers and electrical control devices would either be
39 reused in other applications or sold as scrap after fluid removal. Turbine foundations and below ground
40 cable would probably be left in place.

41
42 The access roads, rock or gravel in the electrical substations, transformer pads, and building foundations
43 would be removed and recycled if no longer needed. Disturbed land areas would be restored to original
44 grade and reseeded with native grasses or planted in crop, as appropriate.

45 46 **2.3 NO-ACTION ALTERNATIVE**

47
48 Continue to operate using commercially generated power.
49
50
51

2.3.1 Public-Private Partnership Alternative

The project description would be the same as the Proposed Action, with the exception of private industry developing and operating the wind turbine generators installed on DOE/NNSA and TTU property, and then providing turbines to the government through lease/purchase.

2.3.2 Combined Phase 1 Action and Public-Private Partnership Alternative

The project description would be similar to the Proposed Action, with DOE/NNSA owning and operating Phase 1 and private industry owning and operating the wind turbine generators, under a lease/purchase agreement, installed during Phases 2 and 3.

2.3.3 Alternatives Considered But Dismissed From Further Consideration

The following alternatives listed in Table 2-1 were considered but dismissed from further consideration because they did not fully meet the purpose and need of this project.

Table 2-1. Initial Screening of Alternative Energy Sources

Alternative	Reason for Elimination from Consideration
Solar energy	Eliminated based on high maintenance required due to extreme weather conditions in the geographical region.
Geothermal energy	Eliminated based on the spatial separation of the closest geothermal resources to Pantex Plant.
Hydroelectric energy	Eliminated based on the lack of reliable surface water resources to produce the required energy to meet Pantex Plant needs.
Biomass energy	Eliminated because of no reduction in greenhouse gas emissions.

2.4 SCOPE OF THE EA

A sliding scale approach was used for analyzing potential environmental and socioeconomic effects and determined that certain aspects of the proposed action have a greater potential for creating environmental effects than others. The aspects with greater potential for impacts are discussed in more detail in this EA. Those aspects of the action judged to have little potential for impact are the following:

Environmental Justice: Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to address the environmental justice impacts of their actions on minority and low-income populations. Every Federal agency is required to analyze environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations (all people of color, exclusive of white non-Hispanics) and low-income families (households with incomes of less than \$15,000 per year) when such analysis is required by NEPA. The Region of Influence (ROI) for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components (SWEIS) environmental justice analysis is a 50-mile (80-km) radius centered in the southwest corner of the site (DOE, 1996). Although the ROI for environmental justice extends beyond the four-county socioeconomic ROI, the four-county socioeconomic area of Armstrong, Carson, Potter, and Randall counties is used for this analysis, and more specifically, the census blocks that abut the southeast portion of the Pantex Plant site in Carson County where the proposed activities would take place.

Based on 2000 census data, approximately one-fifth of all residents living within the ROI are minority. The two ROI urban counties within the Amarillo Standard Metropolitan Area have the largest percentage of minority residents-Potter with 31.4 percent and Randall with 9.6 percent. Of the two more rural counties-4.6 percent of Armstrong County and 6.2 percent of Carson County are considered minority. Persons of Hispanic heritage comprise 20.4 percent of the ROI population. The urban counties have the greatest percentage of Hispanic residents, Potter with 28.1 percent, and Randall with 10.3 percent. Of all residents living in the rural ROI counties, 5.4 percent in Armstrong County and 7.0 percent in Carson County self-designated themselves as Hispanic.

The 2000 census indicated that of all families within the ROI, 10.2 percent are living below the poverty line. Potter County has the largest concentration of families living below the poverty line at 15.4 percent; followed by Armstrong County with 8.2 percent; Randall with 5.7 percent; and Carson with 5.4 percent.

The *Environmental Information Document* indicates that 41 people reside within a 3-mile (5-km) radius of the center of the Plant and 130 people reside within a 5-mile (8-km) radius (BWXT Pantex, 2007). Based on 2000 census data, only 12 people live within census blocks 1122, 1129, 1132, 1137, and 1138. None of these 12 residents is either minority or has a Hispanic heritage. Household income is only available at the block group level in the 2000 census. The median household income for Census Tract 9502, Block Group 1 is \$46,154, and of all 1,258 households living within this block group, 6.8 percent are below the poverty line (DOC, 2005).

Floodplains/Wetlands: Executive Order 11988, "Floodplain Management," and Executive Order 11990, "Protection of Wetlands" are implemented by DOE/NNSA through Title 10 Code of Federal Regulations, Part 1022 (10 CFR 1022).

Wetland resources in the project area are primarily associated with the playas and are the most significant topographical expression and surface hydrological features on the Southern High Plains (SHP). They also provide some of the most important wildlife habitat on the SHP. Playas provide approximately 395,000 acres of wetland habitat in the SHP; however, this represents only 2 percent of the total landscape.

Playas are often seasonally and temporarily inundated. The hydro-periods for these wetlands are unpredictable due to rapidly changing weather patterns. Generally, playas fill only with runoff from precipitation and in some cases irrigation. Most playas are dry during one or more periods each year; usually late winter, early spring, and late summer. Also, it is not uncommon for a playa to have several wet-dry cycles during a growing season, and a playa may be wet or dry at any time during the year. In most cases, playas are not in direct contact with the water table. In the vicinity of Pantex Plant, the perched water table is located at depths of approximately 250 to 300 feet; therefore, none of the playas on or near Pantex Plant intercepts the water table (BWXT Pantex, 2007).

Although the playas are ephemeral water bodies, many playas meet the soils, hydrology, and vegetation criteria for classification as wetlands. Previous studies evaluated Playas 1, 2, 3, 4, and Pantex Lake, located at Pantex Plant and on DOE-owned or leased property, and found that they met the soils, vegetation, and hydrology criteria for wetlands (Herrera Environmental Consultants, 1996).

Floodplains in the project area tend to be associated with topographically low areas, such as playas and watershed drainage ditches. The United States Army Corps of Engineers completed a floodplain delineation study of the Pantex Plant in January 1995. The purpose of that study was to provide floodplain boundaries for the playas in and around the Pantex facilities (U.S. Army Corps of Engineers, 1995). No floodplains or wetlands would be impacted during the construction or operation of this project.

Cultural Resources: A major thrust of the Plant's Cultural Resources Program has been systematic survey coverage of all areas surrounding playas located on DOE-owned land plus a substantial sample of non-playa areas. Based on these surveys, a prehistoric archeological site location model was developed and confirmed. This site location model holds that prehistoric archeological sites at Pantex Plant, and probably throughout the Llano Estacado, will be located within approximately 1/4 mile of playas or their major drainages. Conversely, such sites will not occur in the interplaya upland areas. This site location model was included in formal consultation with the Texas State Historic Preservation Office (SHPO), and is included in the *Pantex Plant Cultural Resource Management Plan* (DOE/NNSA, 2004). Features related to more permanent occupation (such as hearths, tipi rings, fire-cracked rock concentrations, architectural evidence, or human burials) have not been found at any Pantex Plant sites, as either surface or subsurface expressions. Since at least the early 1900s, historic agricultural activities, such as plowing and grazing, have extensively and aggressively modified virtually all of the Llano Estacado. Consequently, most surface or shallow prehistoric archeological sites are seriously disturbed, lacking the original spatial relationships of their artifacts and features. The Pantex Site Office and the SHPO have agreed that the disturbed sites lack the integrity required for consideration of inclusion in the National Register. It is not anticipated that any activities from this project would occur within 1/4 mile of a playa.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 REGIONAL SETTING

The Pantex Plant is centered on approximately 17,503 acres (including Pantex Lake, newly acquired land east of FM 2373, and TTU leased land) in western Carson County of the Texas Panhandle, north of U. S. Highway 60 and 17 miles northeast of downtown Amarillo (See Figure 1). The Plant consists of land that is owned and leased by the DOE/NNSA. A safety and security buffer zone south of the main Plant consists of 5,800 acres leased from TTU.

Pantex Plant is located on the SHP portion of the Great Plains, at an elevation of approximately 3,500 feet. Topography is relatively flat, characterized by rolling grassy plains and numerous natural playa basins. The region is a semi-arid farming and ranching area. Pantex Plant is surrounded by agricultural land, but several industrial facilities are also located nearby.

The primary surface deposits in the project area are the Pullman and Randall soil series, which grade downward to the Blackwater Draw Formation. This formation consists of about 15 meters (50 feet) of interbedded silty clays with caliche and very fine sand with caliche.



Figure 1. Location of Pantex and Key Areas

The principal surface water feature on the Southern High Plains is the Canadian River, which flows southwest to northeast approximately 17 miles north of the Plant. Plant surface waters do not drain into this system, but for the most part, discharge into onsite playas. Storm water from agricultural areas at the periphery of the Plant drains into offsite playas. From the various playas, water either evaporates or infiltrates the soil. Two principal subsurface water-bearing units exist beneath Pantex Plant and adjacent areas: The Ogallala Aquifer and the underlying Dockum Group Aquifer. The vadose, or unsaturated zone, above the Ogallala Aquifer consists of as much as 460 feet of sediments that lie between the land surface and the aquifer (BWXT Pantex 2007).

3.2 SITE-SPECIFIC DESCRIPTION AND ANALYSIS

3.2.1 Land Use

Affected Environment: The project area contains several soil types that, according to the Natural Resources Conservation Service, have been classified as prime farmland. Prime farmland, as defined in 7 CFR 657, contains the best combination of physical and chemical characteristics for producing crops and includes cropland, pastureland, rangeland, and forestland. Prime croplands must have a dependable and adequate water supply from precipitation or irrigation; must be within a favorable climatic zone; have an adequate growing season; a fairly rockless location; and contain an acceptable acidity, alkalinity, and salt and sodium content. These lands usually are protected from flooding and are only moderately erodible, with temporary water saturation. Soil types classified as prime farmland cover the majority of Pantex Plant and TTU property.

Regionally, vegetation is characterized as shortgrass prairie which, aside from playas, provides the primary wildlife habitat in the region. The land at both Pantex and the TTU property ranges from unvegetated in industrial areas to cultivated to Conservation Reserve Program (CRP) land dominated by the exotic species Old World Bluestem (*Bothriochloa ischaemum*) to a variety of shortgrass prairie species, primarily blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*).

The project area, shown in Figure 2, cuts across three different land uses: cultivated ground, mowed native grass, and land in CRP (BWXT Pantex, 2007).

Environmental Consequences of Proposed Action: Calculated from the project description, the approximate impacted acres of Phase 1 associated with the activities of this project would include 17.98 acres of cultivated ground and 1.2 acres of mowed native grassland. Phase 2 would add approximately 36.18 acres of cultivated ground and 26.02 acres of CRP land that would be impacted. Approximate impacted acres associated with Phase 3 activities would be 23.22 acres of CRP land and 34 acres of unknown land use. The total acreage involved in the project for these land types is 54.16 acres of cultivated ground, 49.24 acres of CRP land, 1.2 acres of mowed native grassland, and 34 acres of unknown specific land use due to lack of information concerning a grid connection route. One proposed grid connection would be located approximately 6-miles south of the City of Panhandle, which would require up to approximately 14-miles of line, depending on the exact route selected. The land within any specific route could include cultivated ground, CRP land, and native grassland. The proposed location of this grid connection would be close to riparian habitat associated with the McClellan Creek drainage system.

Table 3-1. Maximum Construction Activity Impacts on Land Use

Activity (Maximum Impact)	All Phases	Temporary (Grassland)	Temporary (CRP)	Permanent (CRP)	Temporary (Crop)	Permanent (Crop)
Location	All					
Number of WTG	39			19		20
Roads	20.06 acres			10.3 acres		9.76 acres
WTG Foundations	1.44 acres			0.70 acres		0.74 acres
WTG Installation (1.5 acres)	57.1 acres		27.84 acres		29.26 acres	
Trenching	12.6 acres		7.7 acres		4.9 acres	
Substation	1.6 acres					1.6 acres
Control Building	0.5 acres					0.5 acres
Inter-connect	2.1 acres					2.1 acres
Aboveground Lines	7.2 acres	1.2 acres	1.7 acres		4.3 acres	
Laydown Area	2.0 acres		1.0 acres		1.0 acres	
Grid Connection Lines ¹	34.0 acres (temporary)					
Total (Temporary)	112.9	1.2	38.24		39.46	
Total (Permanent)	25.7			11.0		14.7
Total	138.6	1.2	38.24	11.0	39.46	14.7

¹ The grid connection lines would have temporary impacts of up to approximately 34 acres during the construction phase, but lack of information on the location of the closest possible connection and route precludes the ability to breakout impacts to specific land use.

Permanent land use impacts would include the all-weather access roads; the exposed base of the foundations; the sub-station, interconnect, and control building; and the pole locations of the aboveground lines. Permanent impacts would account for less than 1 percent of the land use in the project areas.

Non-cultivated land would be reseeded with the appropriate seed mix of native grasses for the soil type and land use. The grasses are best planted between February and April. Wheat can be planted in the fall to prevent erosion, and native grasses can be planted the following spring. If project construction were completed in May or June, the native grasses could still be planted, though that is not the ideal time for establishment. Cultivated land temporarily impacted during installation would be brought back to the original grade for future planting. The Farm Services Agency (FSA) requires a review to determine if CRP status would be impacted on TTU property. Texas Tech Research Farm (TTRF) would be notified of the impacted land by DOE/NNSA and then TTRF would be responsible for submitting details to the County Office Committee regarding the project, since they own or have control of the CRP contract.

Site decommissioning would temporarily impact approximately the same acreage of land as the construction process. All disturbed areas would be reseeded with native grasses or planted in crop, as appropriate.

Environmental Consequences of No Action: There would be no changes to current Pantex or TTU land use in the project area.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

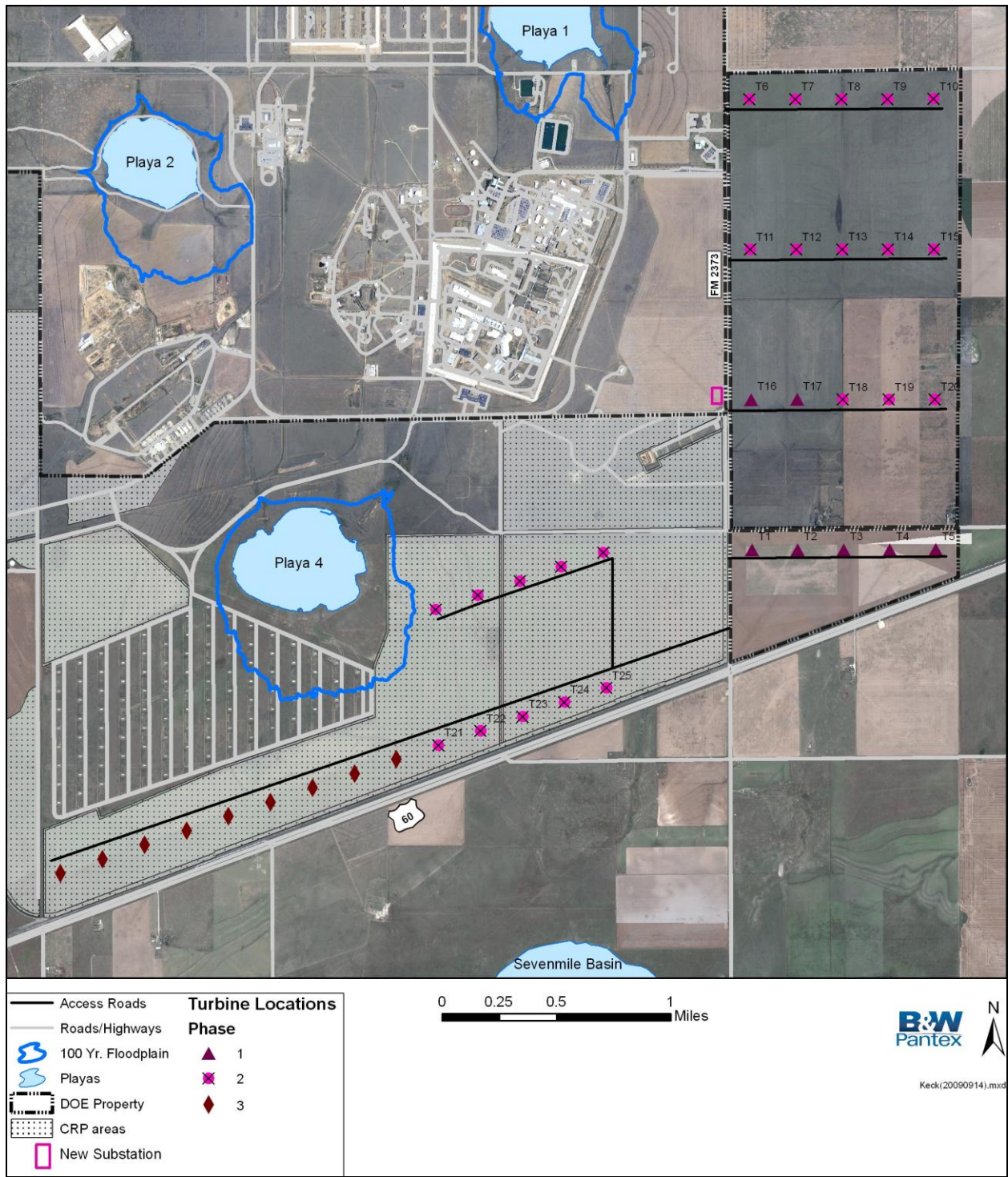


Figure 2. Proposed Wind Turbine Generator Locations

3.2.2 Water Resources

Affected Environment: The major surface water source near Pantex is the Canadian River, located about 17 miles northwest of the facility, which flows in a generally eastward direction into Lake Meredith, a constructed reservoir. Minor surface water bodies in the area include (1) Sweetwater Creek, about 50 miles east of the Plant, which drains the eastern edge of the Southern High Plains; (2) the Salt Fork of the Red River, about 20 miles southeast of the Plant, which also drains the Southern High Plains; and (3) the Prairie Dog Town Fork of the Red River, 35 miles southwest of the Plant.

Most of the surface drainage on the DOE/NNSA-owned and-leased lands flows through manmade ditches, natural drainage channels, or by sheet-flow to area playa basins. Playa basins consist of the playa lakes themselves and their corresponding watersheds. Industrial effluents from Plant operations are treated and, along with some non-contact industrial discharges and domestic wastewater, directed into an onsite wastewater treatment facility. This treated effluent is used for subsurface irrigation on the Plant site under the Texas Land Application Permit, but may be discharged to Playa 1 under the current Water Quality Permit.

Perched groundwater is found below Pantex Plant in the Ogallala Formation. This groundwater is approximately 200 to 300 feet below ground surface. This perched aquifer rests upon a relatively low permeability zone referred to as the fine-grained zone, which consists of silt and clay. Perched groundwater is associated with natural recharge from several playas and historic releases to the ditches draining Zones 11 and 12. The groundwater flows initially outward in a radial manner away from the playa lakes, but then is quickly influenced by the regional south to southeast gradient. The perched groundwater ranges in saturated thickness from less than a foot to approximately 70 feet.

The second water-bearing zone below the fine-grained zone is the Ogallala Aquifer. The groundwater surface beneath the Plant is approximately 400 feet below ground surface and is approximately 1 to 100 feet thick in the southern regions of the Plant and approximately 250 to 400 feet thick in the northern regions. In the vicinity of the Plant, the primary flow direction of the Ogallala Aquifer is north to northeast due to the influence of the City of Amarillo's well field located north of the Plant.

The Ogallala Aquifer is the major source of domestic water for a number of municipalities and industries in the High Plains. The City of Amarillo, the largest user of water from the aquifer in the area, pumps water for public use from the Carson County Well Field north and northeast of the Plant. Pantex Plant obtains its water from wells in the northeast corner of the site. Historical groundwater withdrawals, and long-term pumping from the Ogallala in Carson County and the surrounding eight-county area, have exceeded the natural recharge rate of the Ogallala. These overdrafts have removed large volumes of groundwater from recoverable storage, and have caused substantial water level declines (BWXT Pantex 2007).

Environmental Consequences of Proposed Action: Construction-related activities associated with the proposed project would expose soils and sediments, and any materials spilled during construction, to possible erosion and transport by heavy rainfall or wind. Good engineering practices, including soil erosion and sediment control measures, and spill prevention and waste management practices, would minimize any suspended sediment and pollutant transport that could result in potential water quality impacts. Construction-related activities would be subject to the requirements of Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR150000 for the discharge of storm water. The installation of permanent access roads has the potential to affect surface water drainage patterns. The access roads would be all weather, and must be fairly level to accommodate the large, heavy loads during delivery of the tower sections, blades, turbines, and other equipment. Design would require proper sized culverts to allow for drainage and support the weight of equipment. Coordination with the Texas

Department of Transportation would be required for culverts installed on the right-of-ways of State maintained highways or roads.

Water use would include approximately 12,000 gallons per day for dust suppression and compaction during construction of the access roads, which is estimated to take approximately 60 days for all phases. Approximately 6,000 gallons of water would be required for the concrete during construction of the tower foundations. Total water use is estimated to be approximately 954,000 gallons.

Water use during site decommissioning would be limited to what is needed for dust suppression during ground disturbing activities.

Environmental Consequences of No Action: There would be no changes to surface water drainage patterns or surface water quality.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.3 Biological Resources

Affected Environment: Shortgrass prairie, consisting of buffalograss, blue grama, and western wheatgrass (*Agropyron smithii*), in drainage ditches and low lying areas, represents the primary habitat for species of concern in the area. Shortgrass prairie in the project area may consist of native shortgrass prairie, roadside shortgrass prairie, and industrial shortgrass prairie. The native shortgrass prairie is mostly undisturbed and provides the best habitat. Roadside shortgrass prairie is mowed during the growing season, but can provide excellent habitat for songbirds, depending on mowing schedules and adjacent land use. Industrial shortgrass prairie is occasionally mowed, but can also be impacted by other industrial type activities. It can also provide habitat to species that select for short cover.

Migratory birds are designated as special status species due to their protection by the Migratory Bird Treaty Act, and focus under Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. One hundred and eighty nine (189) species of birds have been recorded at Pantex, and the vast majority are classified as migratory birds. These species are represented by nesting, migration, and winter-season birds, and some can be found on-site year-round. Some species primarily use playas and the Waste Water Treatment Facility, while others focus their activity on grasslands, prairie dog colonies, or croplands, depending on the species and season,

Species with state or federal designation as threatened or endangered that are observed or may be observed at Pantex include the Texas horned lizard (*Phrynosoma cornutum*), American and Arctic Peregrine falcons (*Valco peregrinus anatum* and *Falso peregrinus tundruis*), bald eagle (*Haliaeetus leucocephalus*), interior least tern (*Sterna antillarum athalassos*), white-faced ibis (*Plegadis chihi*), and whooping crane (*Grus america*). The birds listed are migratory, and may be observed in the project area during the fall through spring migrational and wintering periods (BWXT, 2007). The least tern is rarely observed outside its breeding areas on sand and gravel bars of the Canadian and Red Rivers, in the far eastern Texas Panhandle. The Texas horned lizard is the only threatened or endangered species that is a year-round resident in the project area. The species remains common at Pantex, but is associated with micro-habitat consisting of two-track pasture roads within taller grasses for escape cover.

Other state or federal species of concern that are observed or may be observed at Pantex include the Baird's sparrow (*Ammodramus bairdii*), ferruginous hawk (*Buteo regalis*), mountain plover (*Charadrius montanus*), prairie falcon (*Falco mexicanus*), snowy plover (*Charadrius alexandrinus*), western burrowing owl (*Athene curicularia hypugaea*), black-tailed prairie dog (*Cynomys ludovicianus*), big free-tailed bat (*Nyctinomops macrotis*), cave myotis bat (*Myotis velifer*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), and Western smooth-footed bat (*Myotis ciliolabrum*).

Three additional non-migratory species of concern, the swift fox (*Vulpes velox*), plains spotted skunk (*Spilogale putorius interrupta*), and lesser prairie chicken (*Tympanuchus pallidicinctus*) are believed not to occur in the vicinity of the project area. Trapping and spotlight surveys have been conducted since 2000 on Pantex and TTU property to document the presence or absence of swift Fox and plains spotted skunk. Lesser prairie chickens have not been documented in the project area during any research project or field activity, including bird survey transects, and the one county record is questionable and unsubstantiated. Data suggests that these species do not occur in the vicinity of the project.

Black-tailed prairie dog colonies are found near the project area. This state species of concern also provides habitat for other special status species - Ferruginous Hawk, Bald Eagle, golden eagle (*Aquila chrysaetos*), Western Burrowing Owl, mountain plover, and some songbirds.

Environmental Consequences of Proposed Action: Phase 1 construction activities would result in minor short-term impacts to approximately 1.2 acres of roadside shortgrass prairie habitat during the installation of the aboveground electrical lines to the Pantex South Substation. All other Phase 1 and 2 construction activities would occur within agricultural lands, thus minimizing impacts to many species of concern. Phase 3 construction activities would impact approximately 47.7 acres of CRP habitat.

During Phase 3, the construction of access roads and foundations would result in permanent impacts to approximately 10.96 acres of CRP habitat. Although some habitat fragmentation could occur from these permanent impacts, they would affect less than 1 percent of the CRP habitat in the project area.

It is possible that both temporary and permanent disturbance areas from construction activities in CRP habitat would be of use to Texas horned lizards and other species that utilize bare, soft, or recently disturbed ground. Horned lizards' use of these roads could result in mortality of individuals of this species. However, this should be minimal, since roads and traffic associated with this project would not occur in shortgrass prairie areas. After installation of the WTG is completed, the vehicle traffic on the permanent roads would be reduced considerably. If any Texas horned lizards were encountered at the project site, they would be moved out of harm's way, but released adjacent to the site.

Black-tailed prairie dog (*Cynomys ludovicianus*) colonies found near the project area include two colonies on TTU property, and one colony on private property near a small playa just to the east of the DOE/NNSA property proposed for Phase 2 of the project. All three colonies are located in shortgrass prairie outside of the construction areas. Nearby disturbance of soil and vegetation, especially in CRP land, could create conditions favorable for the expansion of these colonies. If colony expansion into the construction area occurs, burrowing owl surveys would be required.

There is some habitat provided by agricultural crops and CRP lands within the project areas. Impacts during construction to species of concern (for example, migrant waterfowl, songbirds, whooping cranes, and mountain plovers [*Charadrius montanus*]) in croplands would be minor and short-lived. This is because crop types are normally rotated and the species of concern are adaptive to finding appropriate foraging habitat among available fields in the vicinity (BWXT Pantex, 2007).

Impacts to habitats of transient species should be minimal, as the habitat disturbance areas during construction would be small in geographic scale.

Operation of wind energy facilities can adversely impact wildlife, especially birds and bats, and their habitat. Bird and bat mortality associated with power lines and wind turbines, and electrocution issues with birds of prey, are well documented. Birds (and bats) feeding over wind farm infrastructure could be subject to strike mortality. In addition, there is a growing body of evidence that bats are susceptible to barotrauma, where internal tissue damage is caused by rapid or excessive pressure caused by wind turbines, as they are to actual strike mortality (Baerwald et al., 2008). Migratory waterfowl, shorebirds, and raptors can be abundant in the project area because of the close proximity to both onsite playas and offsite playas located on private property.

Any non-buried power lines would be designed with effective measures to reduce the probability of avian mortality. This would include locating power lines routes a reasonable distance from wetlands or other bodies of water, and installing visual markers on overhead ground wires on sections where collisions are likely to be significant.

In 2003, the U. S. Fish and Wildlife Service (USFWS) published *Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines*. Pursuant to recommendations in the USFWS guidelines, a contract was awarded to West Texas A & M University (WTAMU) for a review of the literature regarding impacts of wind turbine generators on wildlife and habitat (Matlack, 2009), and to conduct pre-construction monitoring in the project area.

In addition to the pre-development studies, post-installation monitoring is also planned. Coordination with the USFWS and the Texas Parks and Wildlife Department (see Appendix A) confirmed a need for the planned studies and monitoring. Results of these studies and pre-construction monitoring should be available for the final EA.

Site decommissioning would temporarily affect wildlife habitat until the disturbed areas are revegetated. It is possible that temporary disturbance of areas from decommissioning activities would be of use to Texas horned lizards and other species that utilize bare, soft, or recently disturbed ground. If any Texas horned lizards were encountered during decommissioning, they would be moved out of harm's way, but released adjacent to the site.

Environmental Consequences of No Action: There would be no changes to current biological resources.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.4 Air Quality and Climate Change

Affected Environment: Modeling results of concentrations for criteria and toxic pollutants using plant emissions for ongoing operations indicated that none of the National Ambient Air Quality Standards (NAAQS) would be exceeded at the Pantex Plant boundary. All of the toxic air pollutants were estimated to be below their respective annual Effect Screening Levels (ESLs)¹ at the plant boundary. Modeling

¹ Effects Screening Levels are defined in TCEQ Publication RG-442, November 2006, "Guidelines to Develop Effects Screening Levels, Reference Values, and Unit Risk Factors."

1 performed during the period 1996-2001 indicated that no NAAQS or annual ESLs were exceeded during
2 that time. Similarly, concentrations at the Pantex Plant boundary are estimated to continue to remain
3 within all NAAQS and annual ESLs based on projected emissions for continued operations (DOE/NNSA,
4 2008).

5
6 Climate change has evolved into a matter of global concern because it is expected to have widespread,
7 adverse effects on natural resources and systems. A growing body of evidence points to anthropogenic
8 sources of greenhouse gases (GHG) such as carbon dioxide (CO₂) as major contributors to climate
9 change.

10
11 Air emissions in the form of greenhouse gases (carbon dioxide, methane, and nitrous oxide) occur
12 through the use of electricity generated from coal or natural gas operated power plants. Currently, all of
13 the Plant's electrical energy needs are generated from coal or natural gas operated power plants.

14
15 Electrical usage at Pantex Plant is estimated to be an average of 71,430 MWh annually over the next five
16 years (DOE/NNSA, 2008). At an EPA estimate of 1,370 pounds of CO₂ emissions for every MWh of
17 electrical energy generated from coal or natural gas power plants, the Plant's electrical energy needs
18 currently contribute approximately 48,929 tons of CO₂ emissions annually to the atmosphere (EPA,
19 2009b).

20
21 Other GHG, methane (CH₄) and nitrous oxide (N₂O) are also emitted to the atmosphere during the
22 operation of these power plants. Using the EPA published output emission rates for the Southwest Power
23 Pool, South Subregion (which includes the commercial source of the Plant's electrical energy) the Plant's
24 current electricity use contributes approximately 1,784 pounds of CH₄ and 1,615 pounds of N₂O
25 emissions to the atmosphere annually (EPA, 2008).

26
27 Criteria pollutants emitted during the operation of electricity generating power plants include nitrogen
28 oxides (NO_x) and sulfur dioxide (SO₂). The Plant's current electricity use contributes approximately 84
29 tons of NO_x and 124 tons of SO₂ emissions to the atmosphere annually (EPA, 2008).

30
31 Environmental Consequences of Proposed Action: Air emissions would include dust from road
32 construction, excavation, trenching, and movements of construction vehicles, as well as emissions from
33 vehicle exhausts, but would not require monitoring. Standard dust suppression methods, such as water
34 spraying, would be used to minimize dust from excavation or construction. Appropriate best management
35 practices would be used to control fugitive dust and particulate emissions. During the construction and
36 installation of the WTG, air emissions from the mobile engines would be generated, but these would be
37 temporary aspects of the project, and no long-term impacts to the NAAQS would be expected.

38
39 Electrical usage at Pantex Plant is estimated to be an average of 71,430 MWh annually over the next five
40 years (DOE/NNSA, 2008). With a wind capacity factor in the Pantex area estimated to be 45 percent,
41 Phase 1 of this renewable energy project could account for approximately 57,985 MWh of the Plant's
42 annual electrical energy requirements. Based on the EPA power plant emission rates, Phase 1 of this
43 project could result in the avoidance of 39,720 tons of CO₂, 1,448 pounds of CH₄, and 1,311 pounds of
44 N₂O GHG emissions to the atmosphere annually. The completion of Phase 1 could also result in the
45 avoidance of emitting 68 tons of NO_x and 101 tons of SO₂ criteria pollutants (See Table 3-2).

46
47 Site decommissioning would have the same air emissions as the construction process. After site
48 decommissioning, the Plant's use of commercial power plant electrical energy could potentially
49 contribute to GHG emissions at the same levels as the current emissions listed in Table 3-2.

Table 3-2 Comparison of Current Emissions to Post Project Emission Avoidance

GHG	Emissions	Avoidance of Emissions (At 45 Percent Wind Capacity Factor)				
	Current ¹	Phase 1 ²	Phase 2 ³	Phase 3 ⁴	Total ⁵	20-Year ⁶
Carbon dioxide (CO ₂)	48,929 tons	39,720 tons	130,510 tons	51,069 tons	221,299 tons	4,425,980 tons
Methane (CH ₄)	1,784 lbs	1,448 lbs	4,759 lbs	1,862 lbs	8,069 lbs	80 tons
Nitrous oxide (N ₂ O)	1,615 lbs	1,311 lbs	4,307 lbs	1,685 lbs	7,303 lbs	73 tons
Criteria Pollutants						
Nitrogen oxides (NO _x)	84 tons	68 tons	224 tons	87 tons	379 tons	7,580 tons
Sulfur dioxide (SO ₂)	124 tons	101 tons	330 tons	129 tons	560 tons	11,200 tons

¹ Emissions based on annual power plant generation of 71,430 MWh of electricity (estimated annual Pantex use)

² Avoidance of emissions based on annual wind generation of 57,985 MWh of electricity

³ Avoidance of emissions based on annual wind generation of 190,525 MWh of electricity

⁴ Avoidance of emissions based on annual wind generation of 74,553 MWh of electricity

⁵ Avoidance of emissions based on annual wind generation of 323,064 MWh of electricity

⁶ Avoidance of emissions based on 20-year life cycle of wind turbine generator system

Environmental Consequences of No Action: There would be no changes to current air quality emissions, and the Plant's use of commercial power plant electrical energy would continue to contribute to GHG emissions.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action, including the positive impacts in regards to GHG emission avoidance.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action, including the positive impacts in regards to GHG emission avoidance.

3.2.5 Visual Resources

Affected Environment: The topography of the project area is relatively flat. The land is composed of agricultural land, CRP land, and rangeland. In the course of a year, both Pantex workers and some landowners can see different types of crops in various growth stages, vegetation comprised of exotic and native grasses, and wildflowers. Occasionally, cattle can be seen grazing on cropland and rangeland. The office and production buildings at Pantex are visible to some of the landowners and traffic along Highway 60 and Farm to Market Roads (FM) 2373, 683, and 293. Some of the four playas and the Wastewater Treatment Facility, which attract birds and other wildlife, can be seen by some of the landowners and traffic along Highway 60 and FMs 2373, 683 and 293. Shortgrass prairie, including prairie dog colonies, and agricultural fields provide habitat for wildlife that is visible to Pantex workers and some landowners (BWXT, 2007). The area to the north of Pantex Plant is visually dominated by 61 WTG, which extend approximately 385-ft above ground level and can be seen for miles.

Environmental Consequences of Proposed Action: Heavy equipment and hauling operations, staging areas, site preparation activities, excavation, installation of the WTG, and construction traffic would impact cultivated ground and CRP land, thereby creating temporary adverse visual effects. Excavations and installation staging areas would have spots bare of vegetation, but over the long term, removing equipment and reestablishing vegetation in the areas affected by construction would restore the visual qualities of the project area. Permanent visual impacts would include the access roads, control building, new electrical substation and interconnect, and the aboveground electrical lines. The most dominant

visual impact would be the approximately 38 WTG, which could extend to as much as 426-ft above ground level.

Site decommissioning would permanently remove any visual impacts from the project.

Environmental Consequences of No Action: There would be no changes to current visual resources.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.6 Noise

Affected Environment: Sources of environmental noise offsite consist of background sounds from vehicular traffic on Highway 60 and FM's, county roads, airport traffic, railroad traffic, and the operations of heavy equipment during agricultural activities.

Sources of environmental noise at Pantex Plant include background sounds from industrial processes, vehicular traffic, routine operations, and occasional high explosives testing, firearms training of security police officers, ongoing construction and demolition. Average onsite sound levels are 40-60 decibels A-weighted (dBA) (DOE/NNSA, 2008).

Environmental Consequences of Proposed Action: The temporary increase in noise levels from proposed construction activities and traffic would be similar to other construction activities and vehicular noise at Pantex, as well as offsite vehicular traffic, airport traffic, railroad traffic, and agricultural activities. Temporary increases would not be expected to cause sufficient change in noise levels to result in more than a temporary annoyance to employees or adjacent landowners. Temporary, intermittent noise levels (between 80 and 90 dBA) could result from the use of heavy equipment like backhoes, large trucks, and cranes during construction activities. These levels attenuate rapidly with distance, but would likely have a temporary impact on landowners in the rural residential areas of the proposed project. Noise levels would return to pre-construction levels following completion of proposed construction activities.

Noise levels from the operation of wind turbines would generally be within the same 40-60 dBA range as the average onsite sound levels.

Site decommissioning would have temporary increases in noise from the deconstruction activities. There would be no remaining operational noise.

Environmental Consequences of No Action: There would be no changes to the current ambient noise levels.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.7 Human Health

Affected Environment: Pantex workers and subcontractors involved in potentially hazardous operations are protected by administrative and engineering controls, and are required to wear appropriate personal protective equipment. Workers receive training that is required to identify and avoid or correct potential hazards typically found in the work environment, and to respond to emergency situations. Contractors must adhere to Occupational Safety and Health Administration (OSHA) standards in performing all work.

Environmental Consequences of Proposed Action: The types of activities during construction, operation, and maintenance of a wind energy project include a variety of major actions, such as establishing site access; excavating and installing the tower foundations; erecting towers; constructing the central control building, electrical substations, meteorological towers, and access roads; and routine maintenance of the turbines and ancillary facilities.

The occupational hazards associated with wind energy projects are similar to those of the heavy construction and electrical power industries, while others are unique to wind energy projects (i.e., heights, high winds, energized systems, and rotating/spinning equipment). Manufacturers of WTG are required to provide an operator's instruction manual with supplemental information on special local conditions. The manual should include the system's safe operating limits and descriptions, start-up and shutdown procedures, alarm response actions, and an emergency procedures plan.

The primary public safety concern would be rotor blade failure with parts thrown off. A related issue, ice throw, can occur if ice builds up on the turbine blades. Although such occurrences as these are rare, they represent issues of concern. Current design technology and administration controls of a sufficient safety zone, or setback, from residences, roads, and other public access areas would minimize any risk to the public.

Another public safety concern is the transportation of oversized and overweight WTG components to the construction site.

Site decommissioning would have the same the occupational hazards that are associated with the construction phases of the project.

Environmental Consequences of No Action: There would be no changes to the current human health impacts.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.8 Transportation/Traffic

Affected Environment: Regional and site transportation routes are the primary carriers of traffic generated by Plant activities. Onsite interzonal transfers between Zones 4, 11, and 12 are carried out on paved roads. Transportation between buildings in Zones 11 and 12 is frequently carried out via enclosed ramps. Track roads are sometimes used for production and monitoring well access and utility access. Onsite transfer of radioactive material is governed by DOE orders and Pantex-specific standards (DOE, 1996).

1 Offsite, Highway 60 and FMs 683, 2373, and 293 are paved roads that are most heavily used within the
2 project area. There are also unpaved county roads offsite that are less heavily used.

3
4 Environmental Consequences of Proposed Action: During construction there would be an increase in
5 offsite traffic, with some oversized and overweight loads (delivery of turbine components and large
6 cranes) on Highway 60 and FM 2373, which may require traffic management considerations such as
7 flaggers, escort vehicles, and travel time restrictions. These activities would not be expected to cause
8 sufficient change in traffic to result in more than a temporary annoyance to the Plant employees, adjacent
9 landowners, or the users of Highway 60 and FM 2373.

10
11 There would be only minimal impacts to onsite transportation or traffic during the construction phase.
12 The onsite impacts would occur during the installation of the transmission lines to the South Substation
13 during Phase 1, and the installation of the Phase 2 substation and interconnect.

14
15 Site decommissioning would have the same transportation and traffic concerns as the construction phases
16 of the project.

17
18 Environmental Consequences of No Action: There would be no change to current transportation or traffic
19 activities.

20
21 Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same
22 as the Proposed Action.

23
24 Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative:
25 The impacts would be the same as the Proposed Action.

26 27 **3.2.9 Waste**

28
29 Affected Environment: Waste at Pantex Plant is generated from ongoing weapons operations, high
30 explosives production, and support operations such as medical services, vehicle maintenance activities,
31 general office work, construction activities, environmental monitoring, laboratory activities, and
32 environmental restoration activities (DOE, 1996).

33
34 Environmental Consequences of Proposed Action: Construction would result in a potential for the
35 generation, treatment, storage, and disposal of solid waste as defined in 40 CFR 261.2. Waste would be
36 handled in a manner that is appropriate to its characterization and consistent with federal and state
37 regulations and the contractor's approved waste management plan. Waste minimization principles would
38 be incorporated into the project. All waste would be evaluated for recycling or reuse options.

39
40 Excavated soil from WTG foundation construction would be re-used for backfill at the foundation site. If
41 appropriate, any additional excavated soil would be used as base material for the permanent access roads.
42 Any excess soil would be transported to the Plant's borrow pit for future use.

43
44 During site decommissioning, all dismantled turbines and their towers would be recycled at other wind
45 energy projects, sold for scrap, or disposed of off site as solid waste after fluid removal. Broken concrete
46 could be reused for road base or erosion stabilization. Electronic equipment would be recycled or
47 disposed of, possibly as hazardous waste because of the presence of heavy metals. Transformers and
48 electrical control devices would either be reused in other applications or sold as scrap after fluid removal.
49 The access roads, any rock or gravel, and building foundations would be recycled if no longer needed.

Environmental Consequences of No Action: There would be no changes to the current generation of solid waste.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

3.2.10 Environmental Restoration

Affected Environment: Environmental restoration (ER) activities at the Pantex Plant currently include two Perched Groundwater Pump and Treat Systems (PGPTS) and two In-situ Bioremediation (ISB) systems. The PGPTS treats approximately 700,000 gallons of perched groundwater per day. The treated groundwater is pumped to a holding lagoon and then used for onsite crop irrigation via a subsurface drip irrigation system.

The ISB systems currently inject approximately 3.4 million gallons of amendments per year into the systems' 74 perched aquifer injection wells.

These systems use approximately 410 MWh of electricity annually (DOE/NNSA, 2007).

Environmental Consequences of Proposed Action: The goal of the EPA Green Cleanup Standard Initiative is to develop, through a consensus process, a standard that evaluates and minimizes the environmental footprint from a cleanup. Use of the standard would promote resource efficiencies and technology innovation resulting in measurable improvements to human health, the environment, and communities.

The core elements of green cleanup would include:

- Minimize total energy use and maximize use of renewable energy.
- Minimize air pollutants and greenhouse gas emissions.
- Minimize water use and impacts to water resources.
- Reduce, reuse, and recycle material and waste.
- Protect land and ecosystems.

DOE estimates that 1,370 pounds of carbon dioxide (CO₂) are emitted for each MWh of electricity generated by coal or natural gas powered electrical energy generating plants in the United States (EPA, 2009).

The Pantex Plant uses approximately 410 MWh of electric power annually to operate the PGPTS and ISB perched groundwater remediation programs. These perched groundwater remediation programs were estimated to require 30 years to complete (DOE/NNSA, 2007).

At an efficiency rate of 45-percent, alternative wind energy would provide approximately 184.5 MWh of electricity annually to operate these perched groundwater remediation programs. The use of wind generated energy to power these remediation programs would result in avoiding approximately 126 tons of CO₂ emissions annually for the life of the programs.

1 Construction of the PREP would not negatively impact ER projects that are required by the Compliance
2 Plan, while operation of PREP would positively impact the Plan.

3
4 If site decommissioning occurs prior to the completion of the perched groundwater remediation programs,
5 and the use of commercially generated power plant energy would be required, CO₂ emissions would not
6 be avoided for the remainder of the programs.

7
8 Environmental Consequences of No Action: The current perched groundwater remediation program
9 would continue to operate using commercially generated power, with no avoidance of CO₂ emissions.

10
11 Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same
12 as the Proposed Action.

13
14 Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative:
15 The impacts would be the same as the Proposed Action.

16 17 **3.2.11 Utilities Infrastructure**

18
19 Affected Environment: Utilities at the Pantex Plant include electricity, natural gas, water, steam, and
20 wastewater treatment. The SWEIS evaluated alternatives related to continued operations of Pantex Plant.
21 The *Supplement Analysis (SA) for the Final Environmental Statement for the Continued Operation of the*
22 *Pantex Plant and Associated Storage of Nuclear Weapon Components* (DOE/NNSA, 2008), stated that
23 utility usage until 2011 would remain within the ranges evaluated for the years 2002-2006, and within the
24 capacities of the current utility system. Usage by the proposed project should not exceed the ranges of
25 utility usage evaluated in the SA.

26
27 Environmental Consequences of Proposed Action: Approximately 45-percent of the Plant's annual
28 electrical energy requirements would be generated by the wind turbines proposed to be constructed during
29 Phase 1. Additional electrical energy generated from Phases 2 and 3 would be connected to the grid for
30 energy credits to help offset the costs of commercially generated energy needs at the Plant.

31
32 Estimated water use would include approximately 120,000 gallons per day for dust suppression and
33 compaction during access road construction, and approximately 6,000 gallons of water per WTG for the
34 concrete foundations. Natural gas, steam, and wastewater treatment are not expected to be impacted by
35 the project.

36
37 Site decommissioning would require the Plant's electrical energy needs be supplied by commercially
38 generated power. Some water would be required for dust suppression during decommissioning.

39
40 Environmental Consequences of No Action: The current utilities infrastructure would not change with
41 this alternative.

42
43 Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same
44 as the Proposed Action.

45
46 Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative:
47 The impacts would be the same as the Proposed Action.

3.2.12 Socioeconomic Resources

Affected Environment: Pantex employs approximately 3,600 persons, including management and operating contractors, USDOE/NNSA and National Laboratory staff, consultants, and oversight personnel. This employment figure has remained relatively constant for the past 10 years.

Pantex is the major employer in Carson County, and is one of the largest employers within the four county regions of influence that includes Carson, Armstrong, Potter, and Randall counties, and the Amarillo metropolitan area.

For FY 2009, the Plant generated approximately \$261 million in salaries. For FY 2008, \$111 million was spent on Plant purchases, with approximately \$35 million spent in the Texas Panhandle.

Environmental Consequences of Proposed Action: Wind energy project construction, maintenance, and operation activities all create jobs, which in turn generate income for local businesses and communities. The National Renewable Energy Laboratory (NREL) estimates that 4 to 6 one-year jobs during construction and 0.3 to 0.6 long-term jobs during operations for each installed MW of wind energy (Lantz, E., & Tegen, S., 2009). The installation of 80 MW of nameplate wind energy, as proposed with this action, would create 320 to 480 one-year jobs, and 24 to 48 long-term jobs.

Site decommissioning would create short-term construction jobs, and long-term jobs from operations would be lost.

Environmental Consequences of No Action: There would be no changes to the current socioeconomic resources.

Environmental Consequences of Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

Environmental Consequences of Combined Phase 1 Action and Public-Private Partnership Alternative: The impacts would be the same as the Proposed Action.

4.0 CUMULATIVE EFFECTS

Actions that could contribute to cumulative impacts include those conducted by Federal or non-Federal agencies or persons on lands adjacent to the Pantex Plant, within a 50-mile area of influence. Actions in the Area of Influence (AAI) include:

- Construction of power grid transmission lines in Carson and Gray counties.
- Private development of wind turbine generators (wind farms).
- Construction of a wind energy research facility.
- Construction of an overpass at FM 2373 and Highway 60.
- Construction of a gas pipeline.

The construction of the overpass, the gas pipeline, and two wind farms to the east and northeast of the Pantex Plant, have either been completed or are near completion and would be considered to have indirect cumulative impacts.

1 The construction of power grid transmission lines, the wind energy research facility, and additional wind
2 farms could overlap the proposed action in time, and would therefore be considered direct cumulative
3 impacts.

4
5 Analyzed resources, which could receive cumulative effects, are land use, water resources, biological
6 resources, air quality and climate change, visual, noise, human health, transportation, waste, utilities, and
7 socioeconomic.

8 9 **4.1 LAND USE**

10
11 AAI are mostly temporary and short-term. Most of the acreages that are needed for the construction
12 phases of these projects would be returned to their original condition of open space or cultivation. For the
13 long-term impacts of these projects, only the footprint of the facilities would remain and the land not
14 necessary for the footprint would be restored. Pipelines and some electrical connections are underground,
15 so after installation, the surfaces would be returned to the original condition. Permanent land impacts
16 from the installation of wind turbine generator systems are generally 2-5 percent of the total project area
17 (AWEA, 2009). The incremental impact of the proposed action, when added to those from actions of a
18 similar nature, would be minor.

19 20 **4.2 WATER RESOURCES**

21
22 Water use during construction is generally associated with dust suppression, soil compaction, and the
23 mixing of concrete. These uses are temporary and short-term. Occupancy of buildings would require
24 long-term use of water resources similar to the normal use of office buildings. The incremental impact of
25 the proposed action, when added to those from actions of a similar nature, would be minor.

26 27 **4.3 BIOLOGICAL RESOURCES**

28
29 AAI would be temporary and short-term for construction activity impacts to wildlife habitat. Permanent
30 structures and roads could result in habitat fragmentation. In addition, the proposed action, combined
31 with other wind energy projects and transmission lines, would impact avian and bat species likely to
32 collide with wind turbines, transmission lines, and meteorological towers. It can be assumed that
33 cumulative avian and bat mortality would occur, and an undetermined number of mortalities would be
34 migrants. It would be speculative to provide mortality projections for these projects without additional
35 information concerning habitat, utilization by birds and bats, and species composition in the project areas.
36 More information should become available as WTAMU completes the assessment on impacts to wildlife
37 and habitat in the project area.

38 39 **4.4 AIR QUALITY AND CLIMATE CHANGE**

40
41 AAI are intermittent and short term for air quality and, in a region with an average annual wind speed of
42 14 miles per hour, would not degrade the local air quality of the Plant, which continues to meet the
43 allowable emission limits and permit requirements. Therefore, the incremental impact of the proposed
44 action, when added to those from actions of a similar nature, would not result in cumulative impacts on
45 air quality.

46
47 Operation of the proposed action, when added to other proposed wind energy and transmission line
48 projects, would result in the avoidance of GHG and criteria pollutant emissions associated with the
49 production of electricity from coal and natural gas power plants, which would have positive long-term
50 impacts.

4.5 VISUAL

The topography in the region is relatively flat, and man-made objects can generally be seen at moderate distances. Construction activity impacts would be temporary and short term. Long-term impacts would include permanent buildings and structures, such as electrical substations and transmission lines. Large wind turbine generator towers can extend over 400-feet above the ground surface and be seen for miles, and would contribute to a cumulative change to existing visual character of the region. The incremental impacts of the proposed action, when added to impacts from actions of a similar nature, could result in moderate cumulative effects on the visual landscape of the region.

4.6 NOISE

Sounds produced by construction equipment are attenuated by winds, distances, and by their temporary nature. Although the noise from the operation of wind turbine generators can be annoying, these projects are generally located far enough from developed areas that the noise is attenuated. Since noise levels from the operation of wind turbines would generally be within the same 40-60 dBA range as the existing average onsite sound levels, the incremental impact of the proposed action, when added to those from actions of a similar nature, would be minor.

4.7 HUMAN HEALTH

All of the proposed and planned projects could potentially affect human health and safety, especially during construction activities. However, the potential impacts would be localized to the proximity of each project and are not expected to contribute to cumulative impacts.

4.8 TRANSPORTATION/TRAFFIC

A cumulative impact could potentially occur if several of the proposed and planned projects were to be constructed at the same time. Truck traffic with oversize or overweight loads could increase on the highways, but based on the lack of significant impacts during and after the construction of the wind farm currently in place and operating just north of the proposed project site, it is unlikely that service or safety on any highways would be measurably affected. Local roads around the individual projects would not experience cumulative impacts.

4.9 CONSTRUCTION WASTE

No wastes are expected to remain at the proposed project site. All wastes would be handled appropriately in accordance with the approved waste management plans and applicable procedures. The waste would not require special handling beyond the capabilities of licensed disposal facilities. The planned or potential projects making up the AAI would probably not all be constructed simultaneously, therefore the capacities of licensed disposal facilities should not be exceeded at any given time. The incremental impact of the proposed action, when added to those from actions of a similar nature, would be small.

4.10 UTILITIES

The proposed action, when added to other proposed or planned wind energy and transmission line projects, would have a positive long-term cumulative effect on the generation and availability of an alternative, renewable electrical energy resource. The operation of a wind energy research facility would have long-term impacts on water, gas, and wastewater resources within the region. Although some of the electrical energy needs for the facility would be met by wind energy, the use of local power plant generated electricity would still be required.

4.11 SOCIOECONOMIC RESOURCES

The proposed action, when added to other proposed or planned projects, could contribute to increases in temporary and permanent job opportunities and populations within the region. Temporary increases could result from the construction phase of the proposed and planned projects. These temporary increases would not be cumulative if construction periods for each project occurred at different times. Permanent job opportunities and populations could also occur with the proposed or planned wind energy projects.

Demand for public services would generally be on a temporary basis, and be dispersed throughout the region, which would minimize the potential for a significant cumulative impact to these services. The demand for these services by the permanent employees and residents of the projects would be expected to be accommodated without adversely affecting the capacities of the public service systems.

The proposed and planned projects would likely have a cumulative beneficial economic impact to the local economy. The projects would generate tax revenue, royalties, employee salaries, and some increase in retail sales. The projects could have positive cumulative effect on total regional employment.

5.0 ACCIDENT ANALYSIS

The proposed action consists of activities that are similar to those of the heavy construction and electrical power industries, while others are unique to wind energy projects. Hazards are associated with heights, high winds, energized systems, and rotating/spinning equipment. The most serious potential accident considered for the proposed action would be a fatality during construction or maintenance activities. Adverse effects could range from relatively minor (e.g., lung irritation, cuts, or sprains) to major (e.g., lung damage, broken bones, or fatalities). Specialized accident types that are considered at DOE/NNSA facilities are not a consideration for this project.

The primary public safety concern would be hub failure with the blade thrown off. A related issue, ice throw, can occur if ice builds up on the turbine blades. Although such occurrences as these are rare, they represent issues of concern. Current design technology and administrative controls that utilize sufficient safety zone, or setback, from residences, roads, and other public access areas would minimize any risk to the public.

The *National Census of Fatal Occupational Injuries in 2006* from the U.S. Department of Labor - Bureau of Labor Statistics (U.S. Department of Labor, 2006), found that construction activities accounted for 1,226 fatal work injuries, the most of any industry sector. The Occupational Injuries and Illnesses and Fatal Injuries Profile, also from the Bureau of Labor Statistics, includes the following data as causes of fatalities in the construction industry: contact with objects and equipment, falls, exposure to harmful substances or environments, transportation incidents, fires and explosions, assaults, and violent acts. Potential worst-case industrial accident scenarios from the construction of the proposed renewable energy project could include falls, excavation collapse, contact with moving heavy equipment, failure of lifting equipment, or contact with an electrical current.

B&W Pantex has stringent safety requirements for all employees and contractors, and the safety statistics are lower than national averages – in Fiscal Year 2009, the total recordable case rate was 0.43 (Grant, S., 2009). Any B&W contractors associated with the construction or maintenance on a Pantex project would be subject to applicable health and safety regulations and requirements. Appropriate personal protection programs would be a routine part of the construction activities and would involve the use of such personal protection equipment as gloves, hard hats, hard-toed boots, eye protection, hearing protection, and fall protection. The potential for any accidents related to the construction of the proposed renewable energy project would be anticipated to be no worse than the current safety statistics at Pantex.

6.0 INTENTIONAL DESTRUCTIVE ACTS

A fundamental principle of DOE's safeguards and security program is a graded approach to the protection of its employees and assets. This approach is embodied in the relevant threat considerations and designations of facilities. DOE intends that the highest level of protection be given to security interests where loss, theft, compromise, or unauthorized use would adversely affect national security, the health and safety of employees and the public, or the environment.

This graded approach places all DOE assets into one of four "Threat Levels" based on the general consequences of loss, destruction, or impact to public health and safety of the asset, which can be a facility, program, project, or activity. Pursuant to DOE's Design Basis Threat Policy (DOE Order 470.3A), the proposed Pantex Renewable Energy Project is designated a Threat Level 4 (TL4) facility. This is the level assigned to a facility that has the lowest risk based on the general consequence of loss, destruction or impact to security, public health, and safety. In assigning the TL4 designation, DOE has evaluated the security, health and safety impact of the facility and has determined the impact to be low.

Scenarios for intentional destructive acts at the proposed new project (e.g. terrorism, internal sabotage) have been evaluated and determined to have a low potential to impact security, public health and safety. The impact of an intentional destructive act would have no greater environmental, public health or safety consequence than the worst-case industrial accident scenario hazard discussed above.

7.0 AGENCIES, ORGANIZATIONS, AND PERSONS CONTACTED

- United States Department of Agriculture, Farm Services Agency
- Panhandle Regional Planning Commission
- United States Department of the Interior, Fish and Wildlife Service
- Texas Parks and Wildlife Department

8.0 REFERENCES

- AWEA, 2009. American Wind Energy Association, *Wind Energy and Wildlife Factsheet*.
- Baerwald, E. F., G. H. D'Amours, B. J. Klug, and R. M. R. Barclay. 2008. *Barotrauma is a significant cause of bat fatalities at wind turbines*. *Current Biology* 18:R695-R696.
- BWXT Pantex, 2007. *Environmental Information Document in Support of the National Environmental Policy Act Documents for Pantex Plant*
- Code of Federal Regulations, Title 7, Agriculture, Part 657, *Prime and Unique Farmlands*.
- Code of Federal Regulations, Title 10, Energy, Part 1021, *National Environmental Policy Act implementing procedures*.
- Code of Federal Regulations, Title 10, Energy, Part 1022, *Compliance with Floodplain and Wetland Environmental Review Requirements*.
- Code of Federal Regulations, Title 40, Protection of Environment, Part 261, *Identification and Listing of Hazardous Waste*.
- Code of Federal Regulations, Title 40, Protection of Environment, Parts 1500 – 1508, *Council on Environmental Quality*.
- DOE, 1996. *Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (DOE/EIS-0225).
- DOE/NNSA, 2008. *Supplement Analysis for the Final Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapon Components* (DOE/EIS-0225/SA-04).
- DOE/NNSA, 2007. *Environmental Assessment for Proposed Perched Groundwater Corrective Measures* (DOE/EA-1579).
- EPA, 2008. *Year 2005 eGRID Subregion Greenhouse Gases and Criteria Pollutants*.
- EPA, 2009a. *Green Cleanup Standard Initiative, September 2009 Update*.
- EPA, 2009b. *Green Remediation, Profiles & Case Studies of Green Remediation*.
- Executive Order 11988, May 24, 1977. *Floodplain Management*.
- Executive Order 11990, May 24, 1977. *Protection of Wetlands*.
- Executive Order 13423, January 24, 2007. *Strengthening of Federal Environmental, Energy, and Transportation Management*.
- Executive Order 13514, October 5, 2009. *Federal Leadership in Environmental, Energy, and Economic Performance*.

- 1 Grant, S., 2009. Personal communication with S. Grant, Safety Engineer, B&W Pantex, October 13,
2 2009.
3
4 Herrera Environmental Consultants, 1996. *Floodplains and Wetlands Assessment – Pantex Lake and*
5 *Playas 1, 2, 3, and 4.*
6
7 Lantz, E., & Tegen, S., 2009. *Economic Development Impacts of Community Wind Projects: A Review*
8 *and Empirical Evaluation.* Golden, CO: National Renewable Energy Laboratory. NREL/CP-500-45555.
9
10 Matlack, Raymond S., 2009. *Impacts of wind generator turbines – wildlife and habitat.* Literature
11 Review. West Texas A & M University.
12
13 TCEQ Publication RG-442, November 2006. *Guidelines to Develop Effects Screening Levels, Reference*
14 *Values, and Unit Risk Factors.*
15
16 U.S. Army Corps of Engineers, Tulsa District, 1995. *Floodplain Delineation Report, Department of*
17 *Energy Pantex Plant, Amarillo, Texas.*
18
19 DOC, 2005. U.S. Department of Commerce, U.S. Census Bureau, 2000 Census, @
20 <http://factfinder.census.gov>
21
22 U.S. Department of Labor, 2006. Bureau of Labor Statistics *National Census of Fatal Occupational*
23 *Injuries in 2006.*
24

APPENDIX A
AGENCY CORRESPONDENCE

THIS PAGE INTENTIONALLY LEFT BLANK



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
WinSystems Center Building
711 Stadium Drive, Suite 252
Arlington, Texas 76011

August 25, 2009

21420-2009-1-0388

Mr. Johnnie Guelker
Assistant Manager for Environmental and Site Engineering
U.S. Dept. of Energy
National Nuclear Security Administration
Pantex Site Office
P.O. Box 30030 Amarillo,
TX 79120-0030

Dear Mr. Guelker:

This responds to your August 6, 2009, letter requesting comments on the Pantex Renewable Energy Project (PREP) in Carson County, Texas. The proposed project is likely to include the installation of 28-34 wind turbine generators across three phases of development. As indicated in your letter, an environmental assessment (EA) is being prepared for the PREP. The EA will be accompanied by a literature review concerning the effects of wind energy development on fish and wildlife resources, which will be contracted through West Texas A&M University. This review will focus on habitat loss, fragmentation, and direct mortality and will ultimately identify additional research needs documenting the effects of wind energy development on wildlife. It is our understanding that alternative renewable energy projects were being considered for the project location, but that a wind energy facility appears to be the most viable option. As proposed, Phase I of PREP construction could begin in the summer of 2010.

Please be aware that the bald eagle (*Haliaeetus leucocephalus*) was removed from the federal threatened and endangered species list effective August 8, 2007. However, bald eagles are still afforded safeguards under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act. We recommend all construction activities be conducted in accordance with the Service's National Bald Eagle Management Guidelines which may be accessed at the following address: <http://www.fws.gov/migratorybirdslissues/baldeagle/nationalbaldeaglemanagementguidelines.pdf>

Whooping cranes (*Grus americana*) are known to occasionally frequent Carson County, although it does not lie within the 200-mile wide corridor extending from Canada to the Texas Coast in which 94% of whooping crane sightings have occurred during their annual migration. Our records indicate that whooping cranes have been documented at small lakes and/or temporary wetlands during migratory-flight stopovers within 5 miles of the PREP boundary. Additionally, the maps enclosed with

your letter indicate the presence of several permanent water bodies and playa lakes near the project vicinity. While it is currently unknown how whooping cranes may react to large wind turbines, an assessment of potential impacts should be conducted. Although whooping crane migratory flights are generally at altitudes of between 1,000 and 6,000 feet, they fly at lower altitudes when seeking stop-over habitats such as riparian corridors, wetlands and lakes (USFWS 2009). They will often make low flights up to two miles from a stopover site to forage late in the day or in early morning. They may also interrupt migration flights to drink and/or forage in agricultural fields or wetlands for brief periods and may be at low altitudes during mid-day. For these reasons, the Service is concerned with the possibility of collisions by Whooping cranes with wind turbines as well as their associated power lines. Power line collisions are known to be the highest cause of mortality of fledged whooping cranes (USFWS 2009); therefore, the Service recommends that all power lines at wind power facilities be buried underground.

Avian collisions, including those other than the whooping crane, may be significant depending on the species involved and the placement of the power lines. Therefore, we recommend the potential for avian collisions with any non-buried power lines be considered in the planning process and that route alternatives with a high potential for avian mortality be designed with effective measures to reduce the probability of avian mortality. This would include locating power line routes a reasonable distance from wetlands or other large water bodies to avoid bird strikes, and installing visual markers on overhead ground wires on sections where collisions are likely to be significant. A report entitled "Suggested Practices for Avian Protection on Powerlines" (2006) has been made available at www.aplic.org. We recommend that Pantex consider this document when implementing raptor and migratory bird safeguards within the project.

The Service also has concerns regarding impacts to the lesser prairie-chicken (*Tympanuchus pallidicinctus*) [LPCD]. Candidate species, such as the LPC, are not afforded federal protection under the ESA; however, we recommend that potential impacts to these species be considered during project planning. Our records indicate that suitable LPC habitat lies adjacent to the east side of the PREP proposed project location. Preliminary research conducted in similar habitat in southwestern Kansas has shown that the LPC demonstrates some avoidance of tall, vertical structures (Pitman *et al.* 2005); however, definitive research showing avoidance of wind turbine facilities does not exist at this time. Also, encroachment and fragmentation of LPC habitat by wind farms may give the non-native, ring-necked pheasant (*Phasianus colchicus*) a competitive advantage over the LPC (Hagen *et al.* 2007). Ring-necked pheasants are more tolerant of habitat fragmentation and anthropogenic landscape characters (Hagen *et al.* 2007) and are known to increase prairie-chicken nest competition and parasitism in fragmented habitats (Hagen *et al.* 2002, Westemeier *et al.* 1998). An overview of the potential effects of wind energy projects on the LPC is presented by Pruett *et al.* (2009).

To further avoid and/or minimize threats to lesser prairie-chickens, whooping cranes and other wildlife, we encourage you to review the Service's voluntary Interim Guidance on Avoiding and Minimizing Impacts from Wind Turbines, which you have acknowledged in your letter. This guidance may be helpful as you evaluate your proposed wind power generation site, and can be found at

<http://www.fws.gov/habitatconservation/wind.pdf>. This guidance also contains a predevelopment site evaluation and ranking process to assess potential project impacts, as well as recommendations for conducting post-construction monitoring.

March 2010

Predecisional EA for Proposed Pantex Renewable Energy Project

As it becomes available, please supply this office with a copy of the EA and literature review. Thank you for the opportunity to comment on the proposed project. If you have any questions please contact John Morse of my staff at (817) 277 -11 00.

Sincerely,

Thomas J. Cloud Jr.
Field Supervisor

Literature Cited:

- Hagen CA, Jamison BE, Robel RJ, Applegate RD. 2002. Ring-necked pheasant parasitism of lesser prairie-chicken nests in Kansas. *Wilson Bulletin* 114(4):522-524.
- Hagen CA, Pitman JC, Obel RJ, Loughin TM, Applegate RD. 2007. Niche partitioning by lesser prairie-chicken *Tympanuchus pallidicinctus* and ring-necked pheasant *Phasianus colchicus* in southwestern Kansas. *Wildlife Biology* 13(spl):34-41.
- Pitman JC, Hagen CA, Robel RJ, Loughin TM, Applegate RD. 2005. Location and success of lesser prairie-chicken nests in relation to vegetation and human disturbance. *Journal of Wildlife Management* 69(3): 1259-1269.
- Pruett CL, Patten MA, Wolfe DH. 2009. It's not easy being green: wind energy and a declining grassland bird. *Bioscience* 59:257.262.
- United States Fish and Wildlife Service. 2009. Whooping cranes and wind development -an issue paper. Regions 2 and 6. April 2009.
- Westemeier RL, Buhnerkempe JE, Edwards WR, Brawn JD, Simpson SA. 1998. Parasitism of greater prairie-chicken nests by ring-necked pheasants. *Journal of Wildlife Management* 62(3):854-863.



Life's better outside.®

Commissioners

Peter M. Holt
Chairman
San Antonio

T. Dan Friedkin
Vice-Chairman
Houston

Mark E. Bivins
Amarillo

Ralph H. Duggins
Fort Worth

Antonio Falcon, M.D.
Rio Grande City

Karen J. Hixon
San Antonio

Dan Allen Hughes, Jr.
Beeville

Margaret Martin
Boerne

S. Reed Morian
Houston

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

September 21, 2009

Mr. Johnnie F. Guelker
US Department of Energy, Pantex Site Office
P.O. Box 30030
Amarillo, TX 79120-0030

RE: Proposed Pantex Renewable Energy Project, Carson County

Dear Mr. Guelker:

Texas Parks and Wildlife Department (TPWD) has reviewed the request for preliminary information regarding the proposed project referenced above located on the Pantex Plant northeast of Amarillo. TPWD offers the following information for consideration.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency on or after September 1, 2009 may be required by state law. For further guidance, see the attached Texas Parks & Wildlife Code Section 12.0011. For tracking purposes, please refer to TPWD project number 14309 in any return correspondence regarding this project.

Project Description

The proposed project may be comprised of three phases. The first phase would consist of 4 to 6 Wind Turbine Generators (WTG) constructed on federal property that would connect to the existing Pantex South Substation. The second phase would consist of 16 to 18 WTGs, and the third phase would consist of another 8 to 10 WTGs. The second and third phases would be constructed on federally leased property from Texas Tech University (TTU) and would require the construction of a new electrical substation.

Guidelines

The attached draft TPWD Voluntary Recommendations for Wind Energy Development are provided to promote the continued responsible development of wind facilities across the state. These guidelines are intended to enable Texas to develop its wind resources in a manner that minimizes adverse impacts to the wildlife, habitats, and natural resources of Texas through proper

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.state.tx.us

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

e16/309

Mr. Johnnie F. Guelker
Page Two
September 21, 2009

pre-project risk assessment, good project design and operation, and effective adaptive management practices.

Surveys

Pantex is preparing an Environmental Assessment (EA) for the proposed project. In support of the EA, Pantex is working with West Texas A&M University to conduct a literature review focusing on potential impacts of wind energy development on wildlife resources as well as to identify additional research needs. Options for the contract will involve pre-project and post-construction monitoring of impacts on wildlife and habitats.

Recommendation: TPWD supports efforts to perform pre-construction surveys and post-construction monitoring to assess potential impacts on wildlife in the project area. The attached tables titled *Site Sensitivity for birds* and *Site Sensitivity for Bats* may be useful to determine recommended pre- and post-construction monitoring needs. TPWD requests that Pantex consider sharing the results of these surveys with TPWD so that the information can be reviewed in combination with data from other sites to determine if trends or patterns are developing within wildlife populations in Texas as a result of wind power development. This information may also help determine if the recommendations provided are beneficial in minimizing the impacts of siting and operation of wind farms on the fish and wildlife resources.

Birds

Rare and protected birds discussed below and shown on the attached county list, as well as other birds protected by the Migratory Bird Treaty Act (MBTA) and the U.S. Bald and Golden Eagle Protection Act, could occur as residents or migrants in the project area. In addition to direct impacts from collisions with towers and blades, displacement of birds could occur as a result of the proposed wind power development, and studies to evaluate the level of displacement would help determine if this impact would be significant.

Recommendation: TPWD recommends a minimum of two years of pre-construction avian surveys focused during migratory periods in appropriate habitat. Pre-construction survey sites should include areas which may exhibit high bird use and areas which may contain suitable habitat for rare and protected species. Information obtained during pre-project

Mr. Johnnie F. Guelker
Page Three
September 21, 2009

assessments should be used in the design of the project to avoid adverse impacts to birds to the greatest extent feasible. TPWD also recommends two years of post-construction fatality surveys. If conclusive bird mortality data can be obtained in one year, the second year of post-construction studies could focus on the issue of displacement.

Bats

Current research shows that there may be a significant fatality rate for bats at wind turbines. TPWD has no specific information regarding the location of bat colonies in the project area. However, bats are known to use gypsum caves and crevices/overhangs in the general project area and along the edge of the cap rock.

Recommendation: TPWD recommends at least one year of pre-construction bat surveys to obtain information for use in the site plan and help determine periods of high risk. At least two years of post-construction fatality surveys are recommended to determine if the number of bat fatalities at this site is higher than the national average, in which case TPWD recommends the implementation of operation modifications such as increasing the cut in speed of the turbines during periods of high risk. TPWD recommends Pantex coordinate with Dr. Ray Matlack of West Texas A&M University at (806) 651-2583 and Dr. Ed Arnett of Bat Conservation International at (512) 327-9721 for more information regarding bat populations in the area and potential impacts of wind power development on bats.

Rare and Protected Species

Based on the project location and a review of available aerial photography, the following species could potentially be impacted by project activities:

Federal Candidate for Listing

Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

Species of Concern

Ferruginous Hawk (*Buteo regalis*)

Western burrowing owl (*Athene cunicularia hypugaea*)

Black-tailed prairie dog (*Cynomys ludovicianus*)

Swift fox (*Vulpes velox*)

Mr. Johnnie F. Guelker
Page Four
September 21, 2009

Special Features
Prairie dog towns

As seen on the attached map, portions of the estimated occupied range of the Lesser Prairie-Chicken (LPC) are located within one mile of the project study area. On December 10, 2008, the U.S. Fish and Wildlife Service (USFWS) changed the listing priority number of this candidate from a priority number 8 to a priority number 2. Listing priority numbers range from 1 to 12, and a species with a listing priority of 1 would have the highest priority for listing as threatened or endangered under the Endangered Species Act. Additional information regarding listing priority numbers can be found at http://www.fws.gov/endangered/pdfs/1983_LPN_Policy_FR_pub.pdf. This change in priority is partially due to the expansion of wind power projects within the range of the LPC. Research in Kansas on the Greater Prairie-chicken (a closely related species) suggests that this species may avoid areas with tall vertical structures such as transmission line towers and pump jacks. The polygon shown on the attached map represents an incidental observation of the LPC by a credible source. Presence or absence of the LPC in this area has not been verified by TPWD staff. Therefore, as recommended below, the area surrounding the project should be thoroughly surveyed to determine whether occupied LPC habitat or potential habitat for LPC occurs in or adjacent to the study area.

Recommendation: To help preclude listing the LPC as threatened or endangered under the Endangered Species Act, every effort should be made to avoid impacts to this species. TPWD recommends Pantex survey the project area and the surrounding area for LPCs and LPC habitat, preferably using aerial survey methodology, during the 2010 LPC nesting season (10 March - 15 May). Please contact this office for further information regarding survey protocols and materials.

Based on a review of Texas Natural Diversity Database (TXNDD) data in the surrounding area, aerial photography, and limited ground surveys, Black-tailed prairie dog towns may be located in or adjacent to the project study area. The Black-tailed prairie dog is a keystone species which provides food and/or shelter for rare species tracked by TPWD such as the Ferruginous Hawk and the Western Burrowing Owl, as well as many other wildlife species.

Recommendation: TPWD recommends that the project area be surveyed for prairie dog towns prior to determining the turbine layout. If prairie dog

Mr. Johnnie F. Guelker
Page Five
September 21, 2009

towns are discovered in the area, TPWD recommends that they be avoided during turbine siting to avoid direct impacts to the prairie dogs and species that depend on them as well as other raptors that may be attracted to the area due to the availability of prey. The Western Burrowing Owl is dependant on prairie dogs and other fossorial animals. Please note that the Western Burrowing Owl is a protected species under the MBTA, and take of owls is prohibited.

TXNDD records in the project study area are shown on the attached map for your reference. Records on the map are labeled using their Element Occurrence Identification (EOID) number. That number corresponds to the EOID field in the upper right corner of the attached TXNDD reports. Please note that absence of TXNDD information in an area does not imply that a species is absent from that area. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously. As the project progresses and for future projects, please request the most current and accurate information at txnidd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

Recommendation: Please review the attached TPWD county list for Carson County as rare species in addition to those discussed above could be present depending upon habitat availability. These lists are also now available on-line at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/. If during construction, the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species. For the USFWS rare species lists by county please visit <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity

Mr. Johnnie F. Guelker
Page Six
September 21, 2009

cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting wildlife.

Vegetation

Based on a review of the TPWD Vegetation Types of Texas (1984) map, the vegetation found in the study area consists of crops, although native vegetation may also exist in the area. The request for preliminary information states that the three stages of the project would involve installation of a renewable energy source and associated infrastructure in areas currently in cultivated agriculture, as well as land formerly enrolled in the Conservation Reserve Program supporting a monoculture of old world bluestem.

Recommendation: TPWD recommends that the removal of native vegetation for the construction of towers, roads, and transmission lines be minimized to the extent feasible. Unavoidable removal of vegetation should be mitigated by revegetating disturbed areas with site specific plant species where feasible. The replacement of native plants will help control erosion, provide habitat for wildlife, and provide native species an opportunity to compete with undesirable, non-native, invasive plant species. A list of native plant species that can be tailored to fit the site requirements can be developed at <http://tpid.tpwd.state.tx.us/>.

The 77th Texas Legislature required that TPWD prepare and adopt a Land and Water Resources Conservation and Recreation Plan (LWRCRP). In the LWRCRP, native prairies, grassland habitats, and riparian habitats were considered the most threatened in the State and are listed as the highest priority to be conserved by TPWD. This plan, which is currently being updated, can be viewed in its entirety at http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_pl_e0100_0867.pdf.

Water Resources

Based on a review of the TTU Playa Lakes Digital Database, playa lakes may be located near or adjacent to the project area. Information about the Playa

Mr. Johnnie F. Guelker
Page Seven
September 21, 2009

Lakes Digital Database can be found at <http://www.rw.ttu.edu/gstlab/playas.pdf>. These depression areas are used by a host of wildlife species including large numbers of waterfowl and predator species. The presence of wind turbines and associated transmission lines, as well as increased access and human presence during operation, could cause wildlife to abandon the habitat in the area, although little is known about disturbance and displacement effects of wind power projects in Texas. There is also potential for electrocution and collision of large-bodied waterfowl species and avian predators with rotor blades and associated electrical collection systems near these upland lakes. Direct loss to wildlife from electrocution or collisions with blades or lines could be less significant than the potential for disease created by decomposition after these fatalities. Subsequent decomposition of animal tissue within a water regime significantly contributes to the concentration of botulism bacteria that is highly toxic and often fatal to wildlife. During disease epidemics, playa lakes which are highly concentrated with botulism bacteria can have devastating adverse impacts on the remaining waterfowl and wildlife populations which use them.

Recommendation: Turbines should be located as far from the playa lakes as possible to avoid potential collisions with waterfowl and other bird species using the site, and the project should be designed to avoid or minimize additional disturbance to playa lakes. Electrical collection systems should be buried between turbines when feasible, and bird flight diverter markings should be installed when overhead collection lines are used. Raptor protection measures, such as those installed on Pantex utility poles in 2008, should also be used whenever overhead transmission lines are present.

All water resources and associated floodplains, riparian corridors, and wetlands in the study area provide valuable wildlife habitat and should be protected to the maximum extent possible. Necessary waterway crossings by access roads and transmission lines should be made perpendicular to the channels to minimize disturbance of riparian habitat. Natural buffers contiguous to any wetlands or aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. If waterway crossings such as bridges or culverts would be necessary for road improvements or construction access, the fluvial geomorphology of the waterways should not be altered. Changes in the depth, width, slope, or

Mr. Johnnie F. Guelker
Page Eight
September 21, 2009

velocity of the creeks and rivers in the project area could degrade fish and wildlife habitat in the project area and downstream.

Measures should be taken to ensure that activities which could adversely impact water quality are avoided and/or minimized. TPWD recommends the implementation of measures to prevent pollutants including sediment disturbed during construction from reaching water resources in the project area. Storm water controls should be properly installed prior to construction and regularly monitored to ensure they are functioning correctly.

I appreciate the opportunity to provide preliminary input on this project. Please contact me at (512) 389-4579 or Kathy Boydston at (512) 389-4638 if you have any questions.

Sincerely,



Julie C. Wicker
Wildlife Habitat Assessment Program
Wildlife Division

JCW:gg.14309

Attachments

Sec. 12.0011. RESOURCE PROTECTION.

(a) The department is the state agency with primary responsibility for protecting the state's fish and wildlife resources.

(b) The department's resource protection activities include:

(1) investigating fish kills and any type of pollution that may cause loss of fish or wildlife resources, taking necessary action to identify the cause and party responsible for the fish kill or pollution, estimating the monetary value of lost resources, and seeking restoration through presentation of evidence to the agency responsible for permitting or through suit in county or district court;

(2) providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects;

(3) providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources; and

(4) providing recommendations to the Texas Department of Water Resources on scheduling of in-stream flows and freshwater inflows to Texas estuaries for the management of fish and wildlife resources.

(c) An agency with statewide jurisdiction that receives a department recommendation or informational comment under Subsection (b) shall respond to the department in writing concerning the recommendation or comment. A response must include for each recommendation or comment provided by the department:

(1) a description of any modification made to the proposed project, fish and wildlife resource decision, or water flow schedule resulting from the recommendation or comment;

(2) any other disposition of the recommendation or comment; and

(3) as applicable, any reason the agency disagreed with or did not act on or incorporate the recommendation or comment.

(d) A response under Subsection (c):

(1) must be submitted to the department not later than the 90th day after the date the agency makes a decision or takes other action related to the recommendation or informational comment provided by the department; and

(2) is public information under Chapter 552, Government Code.

CARSON COUNTY

BIRDS

Federal Status State Status

American Peregrine Falcon *Falco peregrinus anatum*

DL

T

year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Arctic Peregrine Falcon *Falco peregrinus tundrius*

DL

migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Baird's Sparrow *Ammodramus bairdii*

shortgrass prairie with scattered low bushes and matted vegetation; mostly migratory in western half of State, though winters in Mexico and just across Rio Grande into Texas from Brewster through Hudspeth counties

Bald Eagle *Haliaeetus leucocephalus*

DL

T

found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Ferruginous Hawk *Buteo regalis*

open country, primarily prairies, plains, and badlands; nests in tall trees along streams or on steep slopes, cliff ledges, river-cut banks, hillsides, power line towers; year-round resident in northwestern high plains, wintering elsewhere throughout western 2/3 of Texas

Lesser Prairie-Chicken *Tympanuchus pallidicinctus*

C

arid grasslands, generally interspersed with shrubs such as sand sagebrush, sand plum, skunkbush sumac, and shinnery oak shrubs, but dominated by sand dropseed, sidecoats grama, sand bluestem, and little bluestem grasses; nests in a scrape lined with grasses

Mountain Plover *Charadrius montanus*

breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Peregrine Falcon *Falco peregrinus*

DL

T

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Snowy Plover *Charadrius alexandrinus*

formerly an uncommon breeder in the Panhandle; potential migrant; winter along coast

Texas Parks & Wildlife Dept.
Annotated County Lists of Rare Species

Page 2 of 3

CARSON COUNTY

BIRDS

Federal Status State Status

Western Burrowing Owl *Athene cunicularia hypugaea*

open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Western Snowy Plover *Charadrius alexandrinus nivosus*

uncommon breeder in the Panhandle; potential migrant; winter along coast

Whooping Crane *Grus americana*

LE E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

MAMMALS

Federal Status State Status

Big free-tailed bat *Nyctinomops macrotis*

habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Black bear *Ursus americanus*

T/SA;NL T

bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened

Black-footed ferret *Mustela nigripes*

LE

extirpated; inhabited prairie dog towns in the general area

Black-tailed prairie dog *Cynomys ludovicianus*

dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups

Cave myotis bat *Myotis velifer*

colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore

Gray wolf *Canis lupus*

LE E

extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands

Pale Townsend's big-eared bat *Corynorhinus townsendii pallescens*

roosts in caves, abandoned mine tunnels, and occasionally old buildings; hibernates in groups during winter; in summer months, males and females separate into solitary roosts and maternity colonies, respectively; single offspring born May-June; opportunistic insectivore

Plains spotted skunk *Spilogale putorius interrupta*

CARSON COUNTY**MAMMALS**

Federal Status State Status

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Swift fox *Vulpes velox*

restricted to current and historic shortgrass prairie; western and northern portions of Panhandle

REPTILES

Federal Status State Status

Texas horned lizard *Phrynosoma cornutum*

T

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

PLANTS

Federal Status State Status

Mexican mud-plantain *Heteranthera mexicana*

wet clayey soils of resacas and ephemeral wetlands in South Texas and along margins of playas in the Panhandle; flowering June-December, only after sufficient rainfall

Notes for
County Lists of Texas' Special Species

The Texas Parks and Wildlife (TPWD) county lists **include**:

Vertebrates, Invertebrates, and Vascular Plants identified as being of conservation concern by TPWD within Texas. These special species lists are comprised of species, subspecies, and varieties that are federally listed; proposed to be federally listed; have federal candidate status; are state listed; or carry a global conservation status indicating a species is critically imperiled, very rare, vulnerable to extirpation, or uncommon.

The TPWD county lists **do not include**:

Natural Plant Communities such as Little Bluestem-Indiangrass Series (native prairie remnant), Water Oak-Willow Oak Series (bottomland hardwood community), Saltgrass-Cordgrass Series (salt or brackish marsh), Sphagnum-Beakruss Series (sedge bog).

Other Significant Features such as bird rookeries, migratory songbird fallout areas, comprehensive migratory bird information, bat roosts, bat caves, invertebrate caves, and prairie dog towns.

These lists are not all inclusive for all rare species distributions. The lists were compiled, developed, and are updated based on field guides, staff expertise, scientific publications, and the TPWD Texas Natural Diversity Database (TXNDD) (formerly the Biological and Conservation Data System) occurrence data. Historic ranges for some state extirpated species, full historic distributions for some extant species, accidentals and irregularly appearing species, and portions of migratory routes for particular species are not necessarily included. Species that appear on county lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county.

TPWD includes the Federal listing status for your convenience and makes every attempt to keep the information current and correct. However, the US Fish and Wildlife Service (FWS) is the responsible authority for Federal listing status. The TPWD lists do not substitute for contact with the FWS and federally listed species county ranges may vary from the FWS county level species lists because of the inexact nature of range map development and use.

Status Key:

LE, LT -	Federally Listed Endangered/Threatened
PE, PT -	Federally Proposed Endangered/Threatened
SAE, SAT -	Federally Listed Endangered/Threatened by Similarity of Appearance
C -	Federal Candidate for Listing; formerly Category 1 Candidate
DL, PDL -	Federally Delisted/Proposed for Delisting
NL -	Not Federally Listed
E, T -	State Listed Endangered/Threatened
NT -	Not tracked or no longer tracked by the State
"blank" -	Rare, but with no regulatory listing status

This information is specifically for your assistance only; due to continuing data updates, **please do not redistribute the lists**, instead refer all requesters to the web site at:

http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ or to our office for the most current information available. For questions regarding county lists, please call (512) 389-4571.

Please use the following citation to credit the source for this county level information:

Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment Programs. County Lists of Texas' Special Species. [county name(s) and revised date(s)].

Last Revision: 7 Nov 2008

**Texas Parks and Wildlife Department
Voluntary Recommendations for Wind Energy Development**

February 2008

I. INTRODUCTION

The following Voluntary Recommendations for Wind Energy Development (herein referred to as Recommendations) were developed by Texas Parks and Wildlife Department and do not necessarily represent the opinions of the wind industry or non-governmental organizations.

The purpose of these recommendations is to establish best management practices (BMP) for development of wind energy in Texas, promote the continued responsible development of wind facilities across the state, and enable Texas to develop its wind resources in a manner that minimizes adverse impacts to wildlife, habitats and natural resources of Texas through proper pre-project risk assessment, good project design and operation, and effective adaptive management practices.

II. BACKGROUND

Texas became the number one state in the U.S. for installed wind energy capacity in 2006. Texas citizens and their elected officials strongly support the continued expansion of wind generation to supply an increasing portion of the State's electric generation portfolio for many reasons, including:

- wind energy is an inexhaustible natural resource, and greater utilization of wind energy promotes Texas energy independence, directly offsetting the need for mining of lignite coal in Texas and other types of coal elsewhere, and decreasing the need for transportation of such fossil fuels by rail and truck, thereby reducing harmful impacts on wildlife, the environment, and human health caused by such activities
- wind turbines, once constructed and operational, consume no fuel and have no air emissions, directly decreasing the emissions of mercury, CO₂, NO_x, SO_x and other harmful emissions associated with combustion-generated power, which contribute to global warming and adversely impact all wildlife and humans
- wind turbines consume no water and emit no wastewater, helping conserve Texas' scarce water resources for wildlife and human consumption and preserving the purity of Texas groundwater and surface waters, to the benefit of Texas wildlife and humans

As the State adds new transmission infrastructure to support additional wind energy resources, the parties involved in developing these Recommendations recognize the importance of responsible development, construction, operation and eventual re-powering or potential decommissioning of wind projects.

These Recommendations are intended to ensure wildlife and habitats are protected throughout the project life by encouraging and facilitating continued responsible practices and promoting development of wind resources in a manner that minimizes adverse impacts on Texas wildlife.

III. RECOMMENDATIONS

Mitigation measures are recommended to occur in four general stages:

- A. The first stage involves project siting and development, where mitigation should focus on avoiding and/or reducing potential adverse impacts of a site before the facility is constructed.
- B. The second stage is construction where careful planning should avoid important habitat and reduce disturbance by conducting construction at appropriate times of year when practicable, and away from sensitive habitat areas.
- C. The third stage is operations, where measures should be implemented to minimize ongoing impacts.
- D. The fourth stage is the decommissioning stage at the end of the project's useful life, where restoration measures should be implemented to return the project area largely to its pre-construction state in accordance with landowner requests and contracts.

A. DEVELOPMENT PHASE BMP

1. Developers will collaborate early in the process with qualified expert consultants and relevant regulatory agencies to identify potential environmental concerns, such as the presence of Federal and State listed endangered and threatened species, wetlands, archeological and historical sites and similar issues, and to ensure compliance with all applicable laws and regulations, such as the Endangered Species Act, the Migratory Bird Treaty Act and all Texas laws governing the protection of threatened and endangered species. Developers will use qualified local expert consultants with specialized knowledge of local conditions when available and appropriate.
2. Developers or their consultants will contact TPWD Wildlife Habitat Assessment Program to gather information about habitat or the presence of sensitive species in a proposed project area.
3. Prior to construction, developers should contact TPWD to obtain a list of qualified experts with relevant expertise for specific project areas, if available. Information should be shared with such experts subject to signed confidentiality agreements.

4. Developers will, in collaboration with consultants and agencies, develop appropriate measures to assess the significance of such issues for a given project site, and appropriate means to minimize adverse impacts. Such assessments may include studies on archeological and cultural resources, navigable waterways and wetlands delineation, a Phase 1 environmental site assessment, and similar analysis appropriate for specific projects. For avian and other wildlife species, such assessment measures include pre-construction monitoring surveys, literature surveys, and may include raptor nest surveys, radar monitoring and similar approaches as appropriate for individual projects, and in consideration of the level of pre-existing development in the region.

5. Developers will collect appropriate and pertinent information suitable for identifying the risk of potential impacts of the project on wildlife and habitat. This information would include avian use surveys conducted for a minimum of a twelve month period that take into consideration factors associated with region and habitat and designed to capture species, occurrence and abundance during all four seasons of the year. These studies are to be conducted on representative areas of the site that are expected to include wind turbines, unless not necessary due to availability of sufficient studies which have already been completed for other projects or phases in the region. Information should be collected that considers the following issues as appropriate:

- Identify avian use of a project area by species;
- Understand potential impacts from construction and operation of the proposed site;
- Determine seasonal variation, if any; and
- Collect data to aid in the analysis of impacts such as topographic features and weather conditions.

6. In areas of significant identified raptor activity, a minimum of one raptor nest survey is recommended to be conducted during breeding season and up to within 1-mile of proposed wind turbines location when possible and where appropriate to determine the location and species of active nests potentially disturbed by construction activities, and to identify active and potentially active nest sites with the highest likelihood of impacts from the operation of the wind plant.

7. There is not a consensus on which methodology is effective in predicting bat impacts for pre-construction studies. Wind energy representatives commit to continue to work with bat organizations and scientists to implement methodologies to assess potential bat mortality at prospective wind project locations in sensitive areas. In areas of known bat concentrations or near sensitive bat habitat, information should be collected that considers the following issues as appropriate:

- Seasonal patterns of abundance and use of a prospective site by bats; and
- Roosting areas and daily movement patterns.

8. If existing information suggests the probable occurrence of state and/or federal threatened or endangered species or their habitat on the project site, focused surveys may be recommended by the project's consultants and/or relevant regulatory agencies during the appropriate season to determine the presence or likelihood of presence of the species. For listed species, US Fish & Wildlife Service survey protocols should be followed, if available.

9. Preconstruction assessments may use existing information from comparable projects in comparable habitats within the same region for the relevant issues of concern. Preconstruction assessments should be compared with post construction monitoring data to assess the effectiveness of the guidelines.

10. Turbines should be located in consideration of topographic features that serve to concentrate birds or wildlife at particular areas within the site if determined during preconstruction assessment, or mitigation should be provided that addresses significant impacts.

11. Use of disturbed lands, if feasible, should be considered for priority siting (i.e. developed, cultivated, or otherwise disturbed by road or other development) unless these areas exhibit high use by birds or other wildlife species that are likely to be adversely affected by wind projects.

B. CONSTRUCTION PHASE BMP

1. Use reputable construction contractors and subcontractors, and adhere to best practices in wind project construction.

2. During construction, avoid areas of high risk potential to birds, or other species of concern that are likely to be adversely affected

3. Use tubular towers and avoid creating perching spots on wind turbines.

4. Electrical collection systems between turbines should be buried when feasible and environmentally sound, and bird flight diverter markings used where appropriate when overhead collection lines are used.

5. Use raptor protection measures such as adequate conductor spacing, perch guards and insulated jumper wires.

6. Limit substation and other associated facility pads to as small an area as is practical.

7. Ensure appropriate replacement of topsoil to the surface post-construction and use of best practices to minimize erosion.

8. Locate linear facilities (such as collector cable routes, transmission line routes, or access roads) in or adjacent to existing disturbed corridors or in areas of low habitat value in order to minimize habitat fragmentation and degradation;

9. When feasible, use existing surface roads and align roads to limit habitat fragmentation and erosion;
10. Use pilot warning and obstruction avoidance lighting as recommended by the FAA;
11. Avoid permanently installed upward-firing lighting for substation and O&M building lighting, when possible.
12. Stormwater runoff management plans should be developed to comply with stormwater runoff management plan requirements and all other applicable laws and regulations relating to stormwater.

C. OPERATIONS PHASE BMP

1. Post vehicle speed limits to minimize avian and wildlife mortality.
2. Follow construction, reduction of project road rights-of-way to extent practical and consistent with safety needs and code requirements and the requests of the landowner.
3. Revegetate reclaimed project road rights-of-way with appropriate site-specific native species, unless otherwise directed by the landowner based on prior land use, and properly maintain such rights-of-way in accordance with recommendations of qualified environmental consultants.
4. Implement 12 months of post-construction carcass studies that account for searcher efficiency and scavenging. The duration and intensity of such studies will vary by region, project and various factors such as site sensitivity and pre construction determination of bird and wildlife density, and pre existing information from comparable projects in comparable habitats for the relevant species of concern.

D. DECOMMISSIONING PHASE BMP

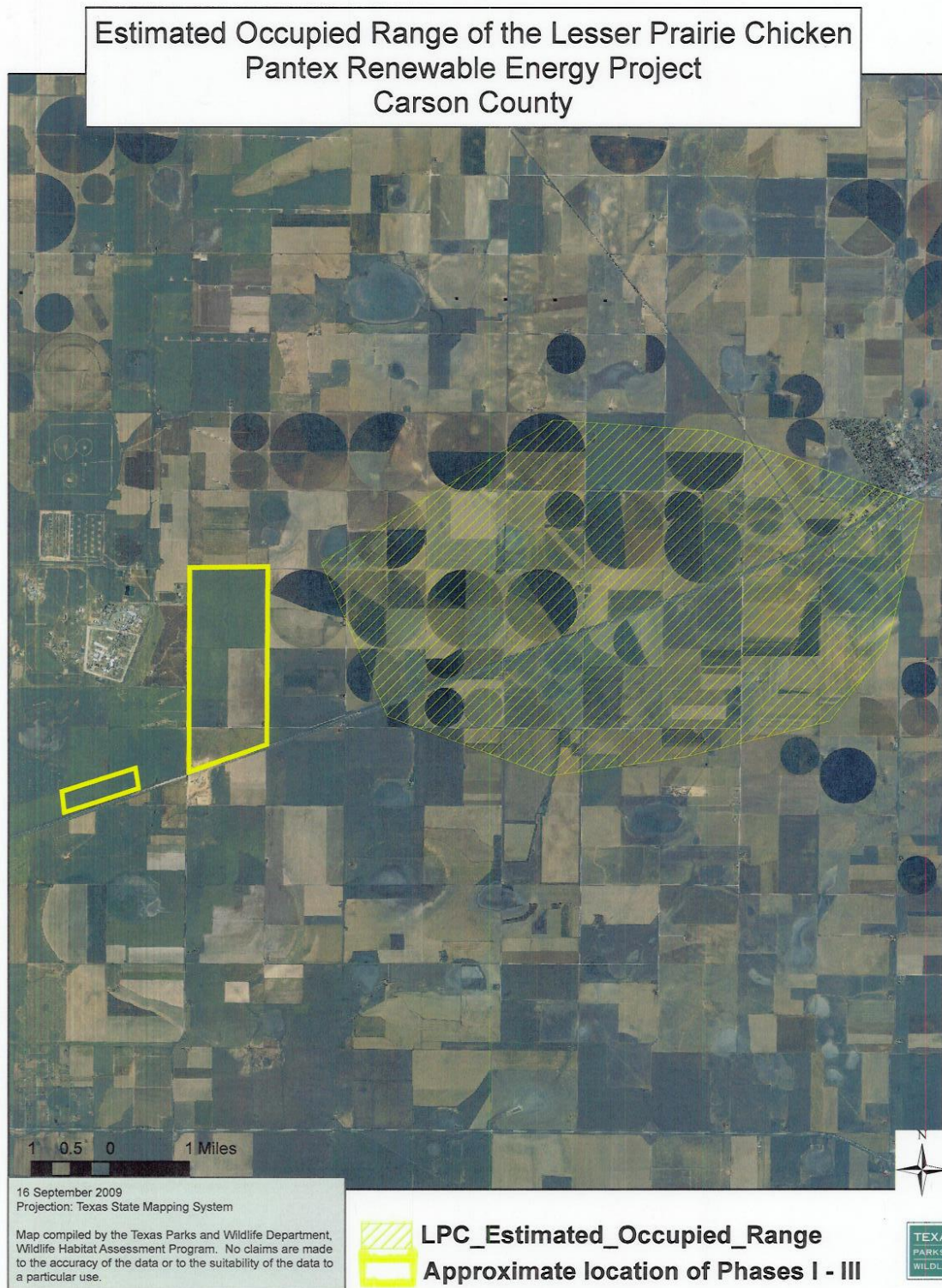
1. Developers will commit, as addressed in the landowner agreements, to removal of turbines, towers and all above-ground equipment, and proper disposal of same, through recycling where possible.
2. Remove foundations to an appropriate depth, consistent with local conditions and land uses, and properly dispose of same through recycling where possible in accordance with landowner requests and agreements. To the extent possible, return the project site to its pre-construction condition through filling in foundation excavations, and reseeding with appropriate native species, unless otherwise directed by landowner.

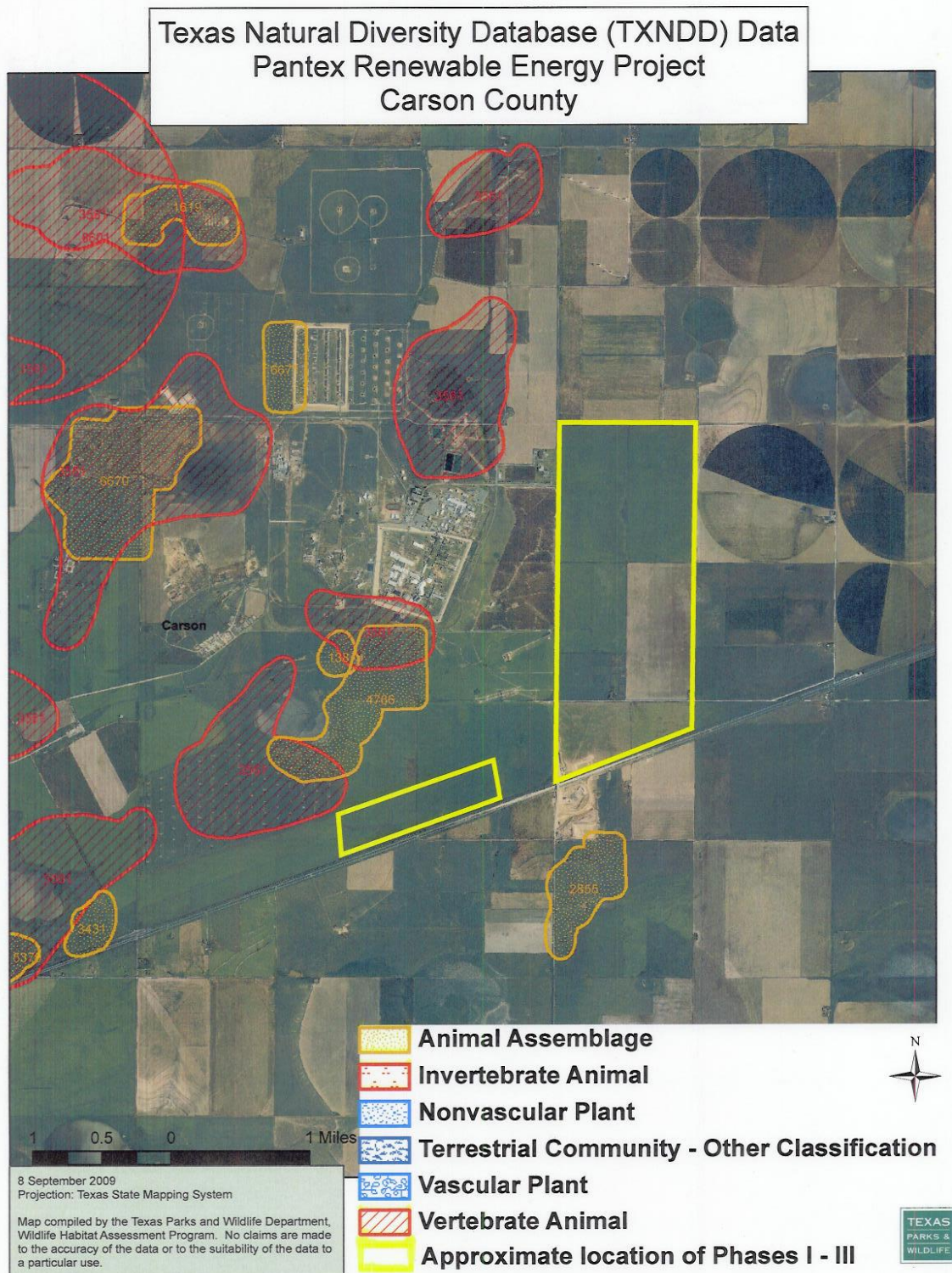
3. Remediation of Recognized Environmental Conditions at the Project Site (e.g., lubricant leaks, etc) caused by the wind facility or its operation.

E. PROSPECTIVE USE OF BMPs

Wind representatives and other stakeholders are cognizant of the fact that developers must place turbine orders and other long-lead equipment orders well in advance of the expected delivery dates for such equipment, and will have invested significant sums, time and effort in development of projects prior to adoption of these BMPs. Nothing herein is intended, nor should be construed, to suggest that projects already under development and with construction timelines dictated by equipment orders already placed, should be in any way delayed or impacted by wind representative's endorsement of these BMPs. It is expected that these BMPs will serve as a tool to help facilitate the continuation of responsible wind project development in Texas. Therefore, it is expected these BMPs to be effective for all projects that reach commercial operations date ("COD") after December 31, 2008.

DRAFT





**Code Key for Printouts from
Texas Parks and Wildlife Department
Texas Natural Diversity Database (TXNDD)**

This information is for your assistance only; due to continuing data updates, vulnerability of private land to trespass and of species to disturbance or collection, please refer all requesters to our office to obtain the most current information available. Also, please note, identification of species in a given area does not necessarily mean the species currently exists at the point or area indicated.

LEGAL STATUS AND CONSERVATION RANKS

FEDERAL STATUS (as determined by the US Fish and Wildlife Service)

LE	Listed Endangered
LT	Listed Threatened
PE	Proposed to be listed Endangered
PT	Proposed to be listed Threatened
PDL	Proposed to be Delisted (Note: Listing status retained while proposed)
SAE, SAT	Listed Endangered on basis of Similarity of Appearance, Listed Threatened on basis of Similarity of Appearance
DL	Delisted Endangered/Threatened
C	Candidate. USFWS has substantial information on biological vulnerability and threats to support proposing to list as threatened or endangered. Data are being gathered on habitat needs and/or critical habitat designations.
C*	C, but lacking known occurrences
C**	C, but lacking known occurrences, except in captivity/cultivation
XE	Essential Experimental Population.
XN	Non-essential Experimental Population
Blank	Species is not federally listed

TX PROTECTION (as determined by the Texas Parks and Wildlife Department)

E	Listed Endangered
T	Listed Threatened
Blank	Species not state-listed

GLOBAL RANK (as determined by NatureServe)

G1	Critically imperiled globally, extremely rare, typically 5 or fewer viable occurrences
G2	Imperiled globally, very rare, typically 6 to 20 viable occurrences
G3	Very rare and local throughout range or found locally in restricted range, typically 21 to 100 viable occurrences
G4	Apparently secure globally
G5	Demonstrably secure globally
GH	Of historical occurrence through its range
GU	Possibly in peril range-wide, but status uncertain
G#G#	Ranked within a range as status uncertain
GX	Apparently extinct throughout range
Q	Rank qualifier denoting taxonomic assignment is questionable
#?	Rank qualifier denoting uncertain rank
C	In captivity or cultivation only
G#T#	"G" refers to species rank; "T" refers to variety or subspecies rank

STATE (SUBNATIONAL) RANK (as determined by the Texas Parks and Wildlife Department)

S1	Critically imperiled in state, extremely rare, vulnerable to extirpation, typically 5 or fewer viable occurrences
S2	Imperiled in state, very rare, vulnerable to extirpation, typically 6 to 20 viable occurrences
S3	Rare or uncommon in state, typically 21 to 100 viable occurrences
S4	Apparently secure in State
S5	Demonstrably secure in State
S#S#	Ranked within a range as status uncertain
SH	Of historical occurrence in state and may be rediscovered
SU	Unrankable – due to lack of information or substantially conflicting information
SX	Apparently extirpated from State
SNR	Unranked – State status not yet assessed
SNA	Not applicable – species is not a suitable target for conservation activities
?	Rank qualifier denoting uncertain rank in State

Revised 1 Apr 2008

ELEMENT OCCURRENCE RECORD

Element Occurrence Record (EOR) Spatial and tabular record of an area of land and/or water in which a species, natural community, or other significant feature of natural diversity is, or was, present and associated information; may be a single contiguous area or may be comprised of discrete patches or subpopulations

Occurrence # Unique number assigned to each occurrence of each element when added to the NDD

LOCATION INFORMATION

Watershed Code Eight digit numerical code determined by US Geological Survey (USGS)

Watershed Name of watershed as determined by USGS

Quadrangle Name of USGS topographical map

Directions Directions to geographic location where occurrence was observed, as described by observer or in source

SURVEY INFORMATION

First/Last Observation Date a particular occurrence was first/last observed; refers only to species occurrence as noted in source and does not imply the first/last date the species was present

Survey Date If conducted, date of survey

EO Type State rank qualifiers:

M Migrant – species occurring regularly on migration at staging areas, or concentration along particular corridors; status refers to the transient population in the State

B Qualifier indicating basic rank refers to the breeding population in State

N Qualifier indicating basic rank refers to the non-breeding population in State

EO Rank

A Excellent	AI Excellent, Introduced
B Good	BI Good, Introduced
C Marginal	CI Marginal, Introduced
D Poor	DI Poor, Introduced
E Extant/Present	EI Extant, Introduced
H Historical/No Field Information	HI Historical, Introduced
X Destroyed/Extirpated	XI Destroyed, Introduced
O Obscure	OI Obscure, Introduced

EO Rank Date Latest date EO rank was determined or revised

Observed Area Acres, unless indicated otherwise

COMMENTS

Description General physical description of area and habitat where occurrence is located, including associated species, soils, geology, and surrounding land use

Comments Comments concerning the quality or condition of the element occurrence at time of survey

Protection Comments Observer comments concerning legal protection of the occurrence

Management Comments Observer comments concerning management recommendations appropriate for occurrence conservation

DATA

EO Data Biological data; may include number of individuals, vigor, flowering/fruitlet data, nest success, behaviors observed, or unusual characteristic, etc.

SITE

Site Name Title given to site by surveyor

MANAGED AREA INFORMATION

Managed Area Name Place name or (on EOR printout) name of area when the EO is located within or partially within a area identified for conservation, such as State or Federal lands, nature preserves, parks, etc.

Alias Additional names the property is known by

Acres Total acreage of property, including non-contiguous tracts

Manager Contact name, address, and telephone number for area or nearest area land steward

Please use one of the following citations to credit the source for the printout information:

Texas Natural Diversity Database. [year of printouts]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts].

Texas Natural Diversity Database. [year of printouts]. Element occurrence printouts for [scientific name] *records # [occurrence number(s)]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts]. *Use of record #'s is optional.

Revised 1 Apr 20

These site sensitivity tables are not part of the Recommendations for Wind Energy Development. These tables are provided by Texas Parks and Wildlife Department to assist in assessing the level of sensitivity (use) of the site for birds and bats, and recommended pre and post construction survey times, depending on the potential level of use by these species. These tables may or may not be supported by individual wind industry developers.

DRAFT

Table 1. Site sensitivity for birds.

Bird use sensitivity	Criteria	Pre-construction Monitoring Minimum Recommendations	Post-construction Monitoring Minimum Recommendations
Very High	<ul style="list-style-type: none"> * major migratory corridor; presence of known populations of lekking galliform species (<i>Tympanuchus cupido attwateri</i>, <i>T. pallidicinctus</i>) * breeding and/or wintering habitat for state or federally-listed T&E species * in or adjacent to area of known high concentrations of bird usage (such as recognized important bird areas or other designated wilderness areas, aggregations of colonial-nesting waterbirds) 	<ul style="list-style-type: none"> * avoid if possible ** consult with relevant state and federal agencies to develop plans for avoidance and/or mitigation; minimum three years studies of usage * consult with relevant state and federal agencies to develop plans for avoidance and/or mitigation; minimum three years studies of usage by T&E species * minimum three years pre-construction surveys to determine specific areas and flight paths of high use - avoid these areas; if not avoidable, then avoid site 	<ul style="list-style-type: none"> * minimum three years studies of usage * minimum three years studies of usage by T&E species * minimum three years post-construction mortality surveys; minimum two years BACI design usage surveys to determine displacement impact
High	<ul style="list-style-type: none"> * known migratory flyway for raptors, waterfowl, shorebirds, etc. * area of potential occupation by lekking species * potential migratory path for state or federal listed threatened/endangered species * area of high concentrations of breeding/foraging raptors * rare and/or declining habitat for suite of imperiled species 	<ul style="list-style-type: none"> * minimum two years surveys encompassing three spring and three fall months * minimum two years pre-construction surveys focusing on spring months and consultation/coordination with appropriate state wildlife professional * minimum two years focused surveys during migratory periods in appropriate habitats * minimum two years raptor nesting surveys and site usage surveys - alter site layout to minimize potential risk * focused surveys of presence and usage of particular habitat; avoidance/mitigation of vulnerable species habitat 	<ul style="list-style-type: none"> * minimum three years post-construction mortality surveys during migratory periods * minimum two years post-construction mortality surveys * minimum two years post-construction mortality surveys during migratory periods in appropriate habitats * minimum two years post-construction mortality surveys during all periods when raptors present * minimum two years post-construction mortality surveys
Medium	<ul style="list-style-type: none"> * area of periodic importance as a migratory stopover (such as flooded agriculture, songbird fallout sites, etc.) 	<ul style="list-style-type: none"> * minimum two years with surveys focused around periods of potential high usage 	<ul style="list-style-type: none"> * minimum two years post-construction mortality surveys focused around periods of potential high usage
Low	<ul style="list-style-type: none"> * area of no known migratory movements of significance or high bird concentrations 	<ul style="list-style-type: none"> * minimum one year bird usage surveys to gather information on bird assemblages by season 	<ul style="list-style-type: none"> * minimum one year post-construction mortality surveys

Table 2. Site sensitivity for bats.

Sensitivity	Criteria	Pre-construction Monitoring Minimum Recommendations	Post-construction Monitoring Minimum Recommendations
Very High	<ul style="list-style-type: none">* Site is ≤ 50 km from known maternity colonies in the Texas Hill Country (see attached map), or 1 km from a known significant hibernacula or significant maternity roost in caves, abandoned mines, or karst topography in other regions.	<ul style="list-style-type: none">* Avoid if possible.* Minimum 2 years of pre-construction data from April through October will be required to inform site plan and help determine high risk period(s).	<ul style="list-style-type: none">* Post-construction monitoring during the core season when bats are active (i.e., April – October) for at minimum the first 2 years of wind turbine operation.* Post-construction monitoring may be reduced (e.g., reduced to July 1st – October 30th, if limited mortality is evident) or continued beyond 2 years (e.g., if substantial mortality is observed) based on the outcome of the monitoring, and in consultation with the TPWD.
High	<ul style="list-style-type: none">* Site is ≤ 10 km from a known significant hibernacula, significant maternity roost or swarming/feeding site.* Site is ≤ 1 km from a shoreline of a major waterbody (e.g., areas that could potentially act as migration corridors or channeling features).* Site is ≤ 1 km from riparian habitat or other wetland features that serve as drinking and feeding sites, or from potential hibernacula habitat features (e.g., caves, abandoned mines, karst topography)* Site is located in forested habitat.	<ul style="list-style-type: none">* Minimum 1 year of pre-construction data from April through October will be required to inform site plan and help determine high risk period(s).	<ul style="list-style-type: none">* Post-construction monitoring during the core season when bats are active (i.e., April – October) for the first 2 years of wind turbine operation.* Post-construction monitoring may be reduced (e.g., reduced to July 1st – October 30th, if limited mortality is evident) or continued beyond 2 years (e.g., if substantial mortality is observed) based on the outcome of the monitoring, and in consultation with the TPWD.
Medium	<ul style="list-style-type: none">* Site is ≤ 50 km from a known significant hibernacula, significant maternity roost, or swarming/feeding site.* Site is ≤ 5 km from riparian habitat or other wetland features that serve as drinking and feeding sites, or from potential hibernacula habitat features (e.g., caves, abandoned mines, karst topography)* Site is ≤ 5 km from a shoreline of major waterbodies* Site is located on landscape level linear habitat features (e.g., escarpments, ridges). *** Site is ≤ 5 km from forested habitat.	<ul style="list-style-type: none">* Minimum one year of pre-construction data from April through October will be required to inform site plan and help determine high risk period(s). If data are available from similar existing sites, pre-construction monitoring may not be required.	<ul style="list-style-type: none">* Post-construction monitoring during the core season when bats are active (i.e., April – October) for minimum the first year of wind turbine operation. If existing data from nearby or similar facilities indicate low spring/early summer fatalities, then monitoring may be adjusted to July through October.* Post-construction monitoring may be continued beyond 1 year (e.g., if substantial mortality is observed) based on the outcome of the monitoring, and in consultation with the TPWD.
Low	<ul style="list-style-type: none">* Site does not contain any of the criteria listed above and/or has no recognized bat conservation features.	<ul style="list-style-type: none">* One year preconstruction survey July –October to develop relationships between pre-construction usage and post-construction mortality.	<ul style="list-style-type: none">* One year of post-construction monitoring from April through October. If existing data from nearby or similar facilities indicate low spring/early summer fatalities, then monitoring may be adjusted to July through October.* Post-construction monitoring may be continued beyond 1 year (e.g., if substantial mortality is observed) based on the outcome of the monitoring, and in consultation with the TPWD.

Element Occurrence Record**Scientific Name:** *Prairie dog town***Occurrence #:** 53 **Eo Id:** 4766**Common Name:****TX Protection Status:****Global Rank:** GNR**State Rank:** SNR**Federal Status:****Location Information:****Latitude:** 351742N**Longitude:** 1013405W**Watershed Code:****Watershed Description:**

11120301

Upper North Fork Red

County Code:**County Name:****Mapsheet Code:****Mapsheet Name:****State:**

TXCARS

Carson

35101-C5

Sevenmile Basin

TX

Directions:

NORTH OF HIGHWAY 60, NORTHEAST OF AMARILLO [WITHIN THE TEXAS TECHNOLOGICAL COLLEGE RESEARCH FARM BOUNDARIES]

Survey Information:**First Observation:****Survey Date:****Last Observation:** 1994**Eo Type:****EO Rank:****EO Rank Date:****Observed Area (acres):****Estimated Representation Accuracy:****Comments:****General****Description:****Comments:****Protection****Comments:****Management****Comments:****Data:****EO Data:****Managed Area:****Managed Area Name:****Managed Area Type:****Reference:****Full Citation:**

PANTEX REPORT. 1995. 1994 ENVIRONMENTAL REPORT FOR PANTEX PLANT. PREPARED BY THE ENVIRONMENTAL PROTECTION DEPARTMENT, ENVIRONMENT, SAFETY, AND HEALTH DIVISION. AMARILLO, TEXAS.

Element Occurrence Record**Specimen:**

TEXAS TECH UNIVERSITY MUSEUM. #793.

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>
---------------------	-------------	-----------------

Element Occurrence Record**Scientific Name:** *Prairie dog town***Occurrence #:** 54 **Eo Id:** 138**Common Name:****TX Protection Status:****Global Rank:** GNR**State Rank:** SNR**Federal Status:****Location Information:****Latitude:** 351801N**Longitude:** 1013408W**Watershed Code:****Watershed Description:**

11120301

Upper North Fork Red

County Code:**County Name:****Mapsheet Code:****Mapsheet Name:****State:**

TXCARS

Carson

35101-C5

Sevenmile Basin

TX

Directions:

NORTH OF HIGHWAY 60, NORTHEAST OF AMARILLO [WITHIN THE TEXAS TECHNOLOGICAL COLLEGE RESEARCH FARM BOUNDARIES]

Survey Information:**First Observation:****Survey Date:****Last Observation:** 1994**Eo Type:****EO Rank:****EO Rank Date:****Observed Area (acres):****Estimated Representation Accuracy:****Comments:****General****Description:****Comments:****Protection****Comments:****Management****Comments:****Data:****EO Data:****Managed Area:****Managed Area Name:****Managed Area Type:****Reference:****Full Citation:**

PANTEX REPORT. 1995. 1994 ENVIRONMENTAL REPORT FOR PANTEX PLANT. PREPARED BY THE ENVIRONMENTAL PROTECTION DEPARTMENT, ENVIRONMENT, SAFETY, AND HEALTH DIVISION. AMARILLO, TEXAS.

Element Occurrence Record**Specimen:**

TEXAS TECH UNIVERSITY MUSEUM. #793.

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>
---------------------	-------------	-----------------

Element Occurrence Record**Scientific Name:** *Prairie dog town***Occurrence #:** 57 **Eo Id:** 2855**Common Name:****TX Protection Status:****Global Rank:** GNR**State Rank:** SNR**Federal Status:****Location Information:****Latitude:** 351630N**Longitude:** 1013213W**Watershed Code:****Watershed Description:**

11120301

Upper North Fork Red

County Code:**County Name:****Mapsheet Code:****Mapsheet Name:****State:**

TXCARS

Carson

35101-C5

Sevenmile Basin

TX

Directions:

FROM JUNCTION OF HIGHWAY 60 AND ROUTE 2161, GO SOUTH 1.2 MILES ON 2161, TURN RIGHT AND GO WEST 1.55 MILES ON LIGHT DUTY ROAD, PRAIRIE DOG TOWN SOUTH OF THE ROAD

Survey Information:**First Observation:****Survey Date:****Last Observation:** 1978**Eo Type:****EO Rank:****EO Rank Date:****Observed Area (acres):**

116

Estimated Representation Accuracy:**Comments:****General****Description:****Comments:****Protection****Comments:****Management****Comments:****Data:****EO Data:****Managed Area:****Managed Area Name:****Managed Area Type:****Reference:****Full Citation:**

LINAM, LEE ANN JOHNSON. 1992. ENDANGERED SPECIES ACT SECTION 6 PROJECT. JOB NO. 22: BLACK-FOOTED FERRET (MUSTELA NIGRIPES) REINTRODUCTION EVALUATION STATUS SURVEY. JANUARY 3, 1992.

Element Occurrence Record**Specimen:****Associated Species:**

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>

9/16/2009

Page 6 of 8

Element Occurrence Record

Scientific Name: *Vulpes velox* **Occurrence #:** 50 **Eo Id:** 3561

Common Name: Swift Fox

TX Protection Status:

Global Rank: G3

State Rank: S2

Federal Status:

Location Information:

Latitude: 351857N

Longitude: 1013531W

Watershed Code:

Watershed Description:

11120301

Upper North Fork Red

County Code:

County Name:

Mapsheet Code:

Mapsheet Name:

State:

TXCARS

Carson

35101-C5

Sevenmile Basin

TX

Directions:

ON PANTEX INSTALLATION GROUNDS; PANTEX PLANT IS LOCATED OFF HIGHWAY 60 BETWEEN AMARILLO AND PANHANDLE, TEXAS IN THE SOUTHWEST CORNER OF CARSON COUNTY

Survey Information:

First Observation: 1995-08

Survey Date:

Last Observation: 1995-08

Eo Type:

EO Rank:

EO Rank Date:

Observed Area (acres):

Estimated Representation Accuracy:

Comments:

General Description: GRASSLANDS, PLOWED/FALLOW FIELDS, PRAIRIE DOG TOWNS, AND FIELDS IN CROPS ALL OCCUR ON THE INSTALLATION

Comments: THE PANTEX FACILITY IS INTERESTED IN INVENTORYING THE AREA FOR SWIFT FOX AND IS CURRENTLY SOLICITING PROPOSALS FOR RADIO TELEMETRY STUDIES ON SWIFT FOX FOR THIS AREA; PANTEX PLANT IS OWNED BY THE U.S. DEPARTMENT OF ENERGY AND PART OF ITS FUNCTION IS TO DISARM NUCLEAR WARHEADS

Protection Comments: ALTHOUGH FEDERALLY OWNED PUBLIC PROPERTY WITH LIMITED PUBLIC ACCESS, THERE IS A POSSIBILITY THAT THE POPULATION OF SWIFT FOX AT THIS FACILITY IS AT RISK OF CHEMICAL/NUCLEAR POISONING

Management Comments: THERE IS NO ACTIVE MANAGEMENT PLAN FOR PROTECTION OF THIS SPECIES; THE AGRICULTURAL FIELDS ARE LEASED TO TEXAS TECH FOR GRAZING AND RANGE MANAGEMENT

Data:

EO Data: SETS OF SWIFT FOX TRACKS WERE NOTED WEST OF PLAYA 2, IN AN OPEN PASTURE AND AT THE EDGE OF A PLOWED FIELD NORTHEAST OF PLAYA 1 AND IN A WHEEL RUT SOUTHWEST OF PLAYA 3; 174 DENS WERE NOTED, INCLUDING THOSE AT PANTEX LAKE (SEE EO 051); SPOTLIGHTING WAS NOT CONDUCTED DUE TO THE HIGH SECURITY OF THE FACILITY, AND NO INDIVIDUAL SWIFT FOX WERE OBSERVED

Managed Area:

Managed Area Name:

Managed Area Type:

Element Occurrence Record

Reference:

Full Citation:

BLAIR, KATHLEEN B. 1995. SWIFT FOX SURVEY AT PANTEX SITE, CARSON COUNTY, TEXAS. REPORT SUBMITTED TO DOE PANTEX (CONTRACT NO. DE-AC04-94AL98863).

Specimen:

Associated Species:

<u>Species Name</u>	<u>Type</u>	<u>Comments</u>

APPENDIX B

RESPONSE TO AGENCY CORRESPONDENCE

**U.S. Fish and Wildlife Service
and
Texas Parks & Wildlife Department**

9/25/09

Specific recommendations from the U.S. Fish and Wildlife Service regarding the PREP EA:

1. Bald Eagles

Recommendation: We recommend all construction activities be conducted in accordance with the Service's National Bald Eagle Management Guidelines which may be accessed at the following address:

<http://www.fws.gov/migratorybirds/issues/baldeagle/nationalbaldeaglemanagementguidelines.pdf>

Response:

Concerning the Service's guidelines, there are no nests or communal roosts on the Pantex property. Over-wintering individuals, or less often, two or three individuals, are commonly observed at the Plant's playas and prairie dog colonies during the winter period. Their appearance is sporadic and they drift on and off the property even within a given day. They are a consideration in the Plant's efforts to conserve and manage shortgrass prairie and playa habitats.

Unrelated to this project, Pantex has proactively added raptor protection to 20 miles of transmission lines replaced/added in the past two years and maintains a stockpile for problem poles identified among other existing lines.

Pantex is striving to keep wind turbines and associated infrastructure out of areas of prairie dog colonies, shortgrass prairie, and away from playas. All planned turbines are slated for areas currently in cultivation. Electrical transmission lines will be buried within the wind farms and raptor protection will be installed on connecting on-site powerline types that are of a design that pose a threat of electrocution.

2. Whooping cranes

Recommendations: While it is currently unknown how whooping cranes may react to large wind turbines, an assessment of potential impacts should be conducted.

Power line collisions are known to be the highest cause of mortality of fledged whooping cranes (USFWS 2009); therefore, the Service recommends that all power lines at wind power facilities be buried underground.

Response:

There have been a few brief sightings of whooping cranes at Pantex, but these have been migrating birds that were only observed once.

Electrical transmission lines will be buried within the wind farms.

3. Avians other than whooping cranes

Recommendations: Avian collisions, including those other than the whooping crane, may be significant depending on the species involved and the placement of the powerlines. Therefore, we recommend the potential for avian collisions with any non-buried powerlines be considered in the planning process and that route alternatives with a high potential for avian mortality be designed with effective measures to reduce the probability of avian mortality. This would include locating powerline routes a reasonable distance from wetlands or other large water bodies to avoid bird strikes, and installing visual markers on overhead ground wires on sections where collisions are likely to be significant. A report entitled "Suggested Practices for Avian Protection on Powerlines" (2006) has been made available at www.aplic.org. We recommend that Pantex consider this document when implementing raptor and migratory bird safeguards within the project.

Response:

Electrical transmission lines will be buried within the wind farms.

On August 6, 2009, B&W Pantex entered a contract with West Texas A&M University/Dr. Ray Matlack to Assess Impacts of Wind Turbine Generators on Wildlife and Habitat at the Pantex Plant. This contract provides for a review of literature, as well as pre-construction surveys and post-construction monitoring. The literature review has been received and has been attached to the environmental assessment (EA) for the Pantex Renewable Energy Project. The project is set up to produce defensible and publishable results, which will be shared with the scientific community, including TPWD and the USF&WS.

The study follows peer-reviewed recommendations of Kunz et al. (2007) in "Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document," and Anderson et al. (1999) in "Studying wind energy/bird interactions: a guidance document."

The WTAMU contract, which includes avian monitoring, is currently funded through December of 2012. This will allow for a minimum of two years of pre-monitoring for all sites, except where turbines may be installed ahead of that schedule (not expected). Regardless, there will be sites that will be "pre-monitored" or used as "controls" for the entire duration of the contract and subsequent extensions to accommodate our planned four years of post-monitoring. There may be opportunity for mitigation based on pre-monitoring results.

4. Lesser prairie-chicken

Recommendations: The Service also has concerns regarding impacts to the lesser prairie-chicken (*Tympanuchus pallidicinctus*[LPCD]). To further avoid and/or minimize threats to lesser prairie-chickens, whooping cranes and other wildlife, we encourage you to review the Service's voluntary Interim Guidance on Avoiding and Minimizing Impacts from Wind Turbines, which you have acknowledged in your letter.

Response:

No LPC have been observed, or heard displaying, on the Plant, including the neighboring Texas Tech Research Farm. The Plant Wildlife Biologist guides surveys and documentation of wildlife, including

for birds, and formerly conducted lek counts of prairie chickens as a biologist with Texas Parks and Wildlife Department. LPC have not been documented during any wildlife research or survey work at Pantex. Documentation of wildlife presence, mapping of prairie dog colonies, and spotlight surveys are conducted annually. Work at Pantex has also included systematic bird transects, small mammal trapping, and estimation of prairie dog populations. Cooperative research with universities has included studies on amphibians and reptiles (including the Texas horned lizard), macroinvertebrates, biodiversity associated with prairie dog colonies (including burrowing owls and other birds), bobcats, and an attempt to document swift fox with trapping and other techniques.

Pantex has consulted with the TPWD District Wildlife Division Office, and the USF&WS's Regional T&E Species Specialist, and it is agreed that there is no reason (sightings or habitat) to believe that a prairie chicken population is present in the vicinity of the Plant, solely based on the single reported observation in the county. Pantex is aware of TPWD's new aerial survey technique and would welcome survey data if gathered in the identified area east of the Plant. This has been voiced to the Panhandle District Wildlife Office and the Nongame Program Leader in Austin.

Pantex is striving to keep wind turbines and associated infrastructure out of areas of shortgrass prairie. All planned turbines are slated for areas currently in cultivation. Electrical transmission lines will be buried within the wind farms.

5. As it becomes available, please supply this office with a copy of the EA and literature review.

The EA and literature review will be provided to the USF&WS. In addition, the pre- and post-monitoring work is set up to produce defensible and publishable results, which will be shared with the scientific community, including TPWD and the USF&WS.

9/21/09

Specific recommendations from the Texas Parks & Wildlife regarding the PREP EA:**1. SURVEYS**

Recommendation: TPWD supports efforts to perform pre-construction surveys and post-construction monitoring to assess potential impacts on wildlife in the project area. The attached tables titled *Site Sensitivity for birds* and *Site Sensitivity for Bats* may be useful to determine recommended pre- and post-construction monitoring needs. TPWD requests that Pantex consider sharing the results of these surveys with TPWD so the information can be reviewed in combination with data from other sites to determine if trends or patterns are developing within wildlife populations in Texas as a result of wind power development. This information may also help determine if the recommendations provided are beneficial in minimizing the impacts of siting and operating of wind farms on the fish and wildlife resources.

Response:

On August 6, 2009, B&W Pantex entered a contract with West Texas A&M University/Dr. Ray Matlack to Assess Impacts of Wind Turbine Generators on Wildlife and Habitat at the Pantex Plant. This contract provides for a review of literature, as well as pre-construction surveys and post-construction monitoring. The environmental assessment (EA) for the Pantex Renewable Energy Project (PREP) and literature review will be provided to TPWD. The project is set up to produce defensible and publishable results, which will be shared with the scientific community, including TPWD and the USF&WS.

The study follows peer-reviewed recommendations of Kunz et al. (2007) in "Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document," and Anderson et al. (1999) in "Studying wind energy/bird interactions: a guidance document." Details to follow below.

Pre-monitoring by WTAMU will build on an already large database of wildlife documentation at Pantex. The Plant Wildlife Biologist guides surveys and documentation of wildlife, including amphibians and reptiles, birds, mammals, and invertebrates. Documentation of wildlife presence, mapping of prairie dog colonies, and spotlight surveys are conducted annually. Work at Pantex has also included systematic bird transects, small mammal trapping, and estimation of prairie dog populations. Cooperative research with universities has included studies on amphibians and reptiles (including the Texas horned lizard), macroinvertebrates, biodiversity associated with prairie dog colonies (including burrowing owls and other birds), bobcats, and an attempt to document swift fox with trapping and other techniques.

2. BIRDS

Recommendation: TPWD recommends a minimum of two years of pre-construction avian surveys focused during migratory periods in appropriate habitat. Pre-construction survey sites should include areas which may exhibit high bird use and areas which may contain suitable habitat for rare and protected species. Information obtained during pre-project assessments should be used in the design of the project to avoid adverse impacts to birds to the greatest extent feasible. TPWD also

recommends two years of post-construction fatality surveys. If conclusive bird mortality data can be obtained in one year, the second year of post-construction studies could focus on the issue of displacement.

Response:

The WTAMU contract, which includes avian monitoring, is currently funded through December of 2012. This will allow for a minimum of two years of pre-monitoring for all sites, except where turbines may be installed ahead of that schedule (not expected). Regardless, there will be sites that will be “pre-monitored” or used as “controls” for the entire duration of the contract and subsequent extensions to accommodate our planned four years of post-monitoring. There may be opportunity for mitigation based on pre-monitoring results.

Study sites include proposed turbine and non-turbine sites, shortgrass prairie, prairie dog colonies, cultivated cropland, and different proximities to playa wetlands. Techniques for birds will include pre- and post-turbine point counts, and nighttime surveys with thermal cameras. Mortality associated with turbines and other infrastructure will be assessed through plot searches and thermal cameras. Determination of scavenging rates and differences in pre- and post-turbine wildlife use (displacement) will be a part of this work.

3. BATS

Recommendation: TPWD recommends at least one year of pre-construction bat surveys to obtain information for use in the site plan and help determine periods of high risk. At least two years of post-construction fatality surveys are recommended to determine if the number of bat fatalities at this site is higher than the national average, in which case TPWD recommends the implementation of operation modifications such as increasing the cut in speed to the turbines during periods of high risk. TPWD recommends Pantex coordinate with Dr. Ray Matlack of West Texas A&M University at (806) 651-2583 and Dr. Ed Arnett of Bat Conservation International at (512) 327-9721 for more information regarding bat populations in the area and potential impacts of wind power development on bats.

Response:

The contract with Dr. Matlack does provide for monitoring of bats. Like the avian objectives, funding for the monitoring of bats is in place to run through December of 2012. This will allow for a minimum of two years of pre-monitoring for all sites, except where turbines may be installed ahead of that schedule (not expected). Regardless, there will be sites that will be “pre-monitored” or used as “controls” for the entire duration of the contract and subsequent extensions to accommodate our planned four years of post-monitoring.

Study sites include proposed turbine and non-turbine sites, shortgrass prairie, prairie dog colonies, cultivated cropland, and different proximities to playa wetlands. Techniques for bats will include pre- and post-turbine acoustic monitoring, and nighttime surveys with thermal cameras. Mortality associated with turbine and other infrastructure will be assessed through plot searches and thermal cameras.

TPWD or Bat Conservation International will be consulted should bat fatalities exceed the national average. Pantex does have information relating to reducing mortality of bats (cut in speed

adjustment) during periods of high risk and may consider this depending on bat mortality and impacts to power production.

4. LESSER PRAIRIE-CHICKEN

Recommendation: To help preclude listing the LPC as threatened or endangered under the Endangered Species Act, every effort should be made to avoid impacts to this species. TPWD recommends Pantex survey the project area and the surrounding area for LPCs and LPC habitat, preferably using aerial survey methodology, during the 2010 LPC nesting season (10 March – 15 May). Please contact this office for further information regarding survey protocols and materials.

Response:

As stated previously, Pantex surveys for, and documents wildlife use at Pantex. No LPC have been observed, or heard displaying, on the Plant, including the neighboring Texas Tech Research Farm. Pantex has consulted with the TPWD District Wildlife Division Office, and the USF&WS's Regional T&E Species Specialist, and it is agreed that there is no reason (sightings or habitat) to believe that a prairie chicken population is present in the vicinity of the Plant, solely based on the single reported observation in the county. Pantex is aware of TPWD's new aerial survey technique and would welcome survey data if gathered in the identified area east of the Plant. This has been voiced to the Panhandle District Wildlife Office and the Nongame Program Leader in Austin.

Pantex is striving to keep wind turbines and associated infrastructure out of areas of shortgrass prairie. All planned turbines are slated for areas currently in cultivation. Electrical transmission lines will be buried within the wind farms.

5. PRAIRIE DOGS

Recommendation: TPWD recommends that the project area be surveyed for prairie dog towns prior to determining the turbine layout. If prairie dog towns are discovered in the area, TPWD recommends that they be avoided during turbine siting to avoid direct impacts to the prairie dogs and species that depend on them as well as other raptors that may be attracted to the area due to the availability of prey. The Western Burrowing Owl is dependent on prairie dogs and other fossorial animals. Please note that the Western Burrowing Owl is a protected species under the MBTA, and take of owls is prohibited.

Response:

Pantex maps all of its prairie dog colonies on an annual basis, tracking their distribution and boundary changes between years. We are also familiar with colonies on surrounding lands. We have participated in cooperative research with Texas Tech University on prairie dogs, burrowing owls, and associated species, participated in the Texas Black-Tailed Working Group during the proposed listing, and even manage our prairie dogs under a Management Plan for Black-Tailed Prairie Dogs and Western Burrowing Owls at Pantex Plant.

Pantex is striving to keep wind turbines and associated infrastructure out of areas of shortgrass prairie. All planned turbines are slated for areas currently in cultivation.

Electrical transmission lines will be buried within the wind farms and raptor protection will be installed on connecting on-site powerline types that pose a threat of electrocution. Unrelated to this project, Pantex has proactively added raptor protection to 20 miles of transmission lines replaced/added in the past two years and maintains a stockpile of protection devices for problem poles identified among other existing lines.

6. RARE SPECIES LIST

Recommendation: Please review the attached TPWD county list for Carson County as rare species in addition to those discussed above could be present depending upon habitat availability. These lists are also now available on-line at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/. If during construction, the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species. For the USFWS rare species lists by county please visit <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>.

Response:

Pantex is very familiar with the Annotated County Lists of Rare Species for Carson County (and the closely located Potter County). These are used routinely during reviews associated with the National Environmental Policy Act, and preparation of Environmental Assessments, Environmental Impact Statements, and annual and other environmental reports. As with TPWD, the USF&WS is consulted as needed, for example, just recently on the potential prairie chicken range identified east of Pantex.

7. VEGETATION

Recommendation: TPWD recommends that the removal of native vegetation for the construction of towers, roads, and transmissions lines be minimized to the extent feasible. Unavoidable removal of vegetation should be mitigated by revegetating disturbed areas with site specific plant species where feasible. The replacement of native plants will help control erosion, provide habitat for wildlife, and provide native species an opportunity to compete with undesirable, non-native, invasive plant species. A list of native plant species that can be tailored to fit the site requirements can be developed at <http://tpid.tpwd.state.tx.us/>.

The 77th Texas Legislature required that TPWD prepare and adopt a Land and Water Resources Conservation and Recreation Plan (LWRCRP). In the LWRCRP, native prairies, grassland habitats, and riparian habitats were considered the most threatened in the State and are listed as the highest priority to be conserved by TPWD. This plan, which is currently being updated, can be viewed in its entirety at http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_pl_e0100_0867.pdf.

Response:

Pantex revegetates disturbed native vegetation routinely, and has established native grasses on several tracts of formerly cultivated lands. Under the spirit of Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, and concepts promoted by the Playa Lakes Joint Venture, Black-Tailed Prairie Dog Working Group, Texas Partners in Flight, and the

Nature Conservancy's Shortgrass Prairie Initiative, guidelines were developed and implemented for reseeding disturbed or restored areas with shortgrass species endemic to the specific soil type.

Pantex is striving to keep wind turbines and associated infrastructure out of areas of shortgrass prairie. All planned turbines are slated for areas currently in cultivation.

8. WATER RESOURCES

Recommendation: Turbines should be located as far from the playa lakes as possible to avoid potential collisions with waterfowl and other bird species using the site, and the project should be designed to avoid or minimize additional disturbance to playa lakes. Electrical collection systems should be buried between turbines when feasible, and bird flight diverter markings should be installed when overhead collection lines are used. Raptor protection measures, such as those installed on Pantex utility poles in 2008, should also be used whenever overhead transmission lines are present.

All water resources and associated floodplains, riparian corridors, and wetlands in the study area provide valuable wildlife habitat and should be protected to the maximum extent possible. Necessary waterway crossings by access roads and transmission lines should be made perpendicular to the channels to minimize disturbance of riparian habitat. Natural buffers contiguous to any wetlands or aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. If waterway crossings such as bridges or culverts would be necessary for road improvements or construction access, the fluvial geomorphology of the waterways should not be altered. Changes in the depth, width, slope, or velocity of the creeks and rivers in the project area could degrade fish and wildlife habitat in the project area and downstream.

Measures should be taken to ensure that activities which could adversely impact water quality are avoided and/or minimized. TPWD recommends the implementation of measures to prevent pollutants including sediment disturbed during construction from reaching water resources in the project area. Storm water controls should be properly installed prior to construction and regularly monitored to ensure they are functioning correctly.

Response:

Pantex is striving to keep wind turbines and associated infrastructure away from playa basins. All on site playa lakes have been "buffered" in shortgrass prairie or restored shortgrass prairie habitat, a concept promoted by the Playa Lakes Joint Venture. Avoiding placement of turbines in shortgrass prairie, thus, provides additional buffer from wetlands. All planned turbines are slated for areas currently in cultivation.

Electrical transmission lines will be buried within the wind farms and raptor protection will be installed on connecting on-site powerline types that pose a threat of electrocution. Unrelated to this project, Pantex has proactively added raptor protection to 20 miles of transmission lines replaced/added in the past two years and maintains a stockpile for problem poles identified among other existing lines.

The Plant enforces storm water and construction-related regulations on all projects conducted on the Plant and related work off-site. Any culvert work associated with the construction of permanent access roads from State highway right-of-ways would be coordinated with the Texas Department of Transportation to ensure proper drainage is maintained. Where permanent access roads cross channels, culverts would be installed to maintain water flow to the playas.

In conjunction with the Plant Agronomist, land management is conducted using state-of-the-art Geographic Information System techniques, and includes a habitat layer led by the Plant Wildlife Biologist. Shortgrass prairie and playas are protected, whenever possible, and needed mitigation and management is implemented to maintain and manage habitat. A rotational grazing system, with significant periods of rest, and prescribed fire are part of this management. Several plans guide land and wildlife management on the Plant:

- 1. Integrated Plan for Playa Management at Pantex Plant*
- 2. Management Plan for Black-Tailed Prairie Dogs and Western Burrowing Owls at Pantex Plant*
- 3. Management Plan for Nuisance Animals at Pantex Plant*
- 4. Rangeland and Cropland Conservation Plan for Pantex*
- 5. Water Quality Management Plan for Pantex*
- 6. Texas Pollutant Discharge Elimination System Storm Water General Permit for Construction Activities*